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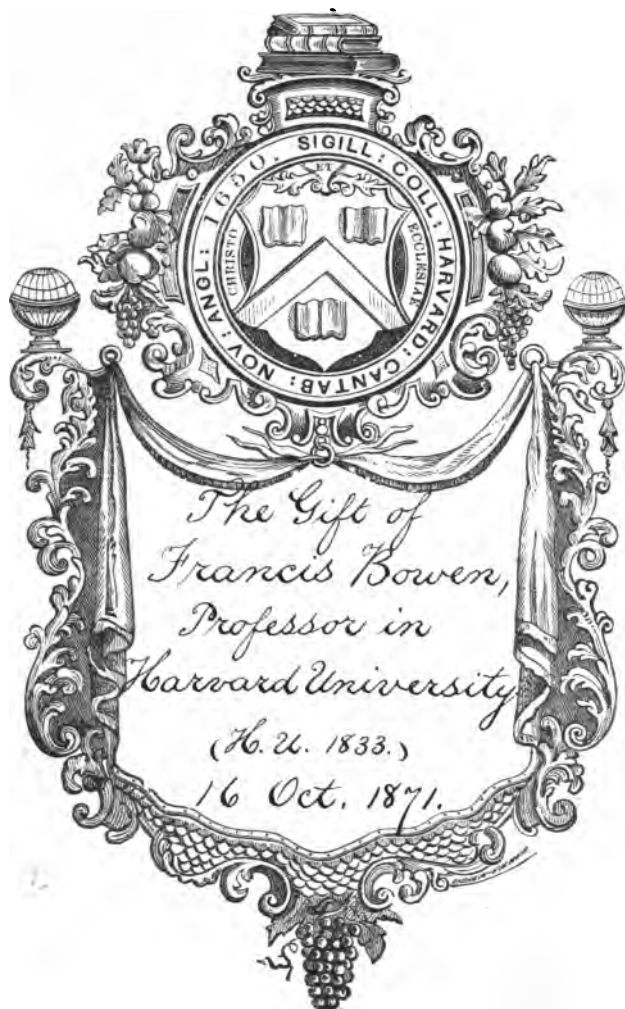
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MERCHANTS'
STUDENTS' AND CLERKS'
MANUAL.

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THE
M E R C H A N T S'
STUDENTS' AND CLERKS'
MANUAL:

CONTAINING FULL AND LUCID ILLUSTRATIONS OF DECIMAL FRACTIONS, WITH
THEIR APPLICATIONS IN THE COMPUTATION OF INTEREST, DISCOUNT,
INSURANCE, AVERAGING THE TIME OF PAYMENTS, EXCHANGE,
ARBITRATION OF EXCHANGE, COMPUTATION OF DUTIES,
INTEREST TABLE, TIME TABLES, TABLES OF FOREIGN
MONEY AND EXCHANGE TABLES.

BY JAMES ROBINSON,

LATE PRINCIPAL OF THE MATHEMATICAL DEPARTMENT
OF THE BOWDOIN SCHOOL, BOSTON.

BOSTON:
PUBLISHED BY THOMAS GROOM & CO., 82 STATE STREET.
1856.

~~Educ T 118.56.3~~
Educ T 118.56.749

1871, Oct. 16.
Gift of
Prof. Francis Bowen,
of Cambridge.
(Ms. A. 18.33.)

Entered according to Act of Congress, in the year 1856, by JAMES ROBINSON, in the
Clerk's Office of the District Court of the District of Massachusetts.

P R E F A C E .

THIS MANUAL is designed to furnish students in academies, high schools, and other seminaries of learning, who are pursuing a course of studies to qualify themselves for a situation in a counting-house, with a full explanation and illustration of those principles and rules for computation which they will often be required to apply in the transaction of business. Also, to furnish young clerks with a compend of selected and accurate methods of computing interest, averaging accounts, and other mercantile calculations, a knowledge of which will enable them to transact business with facility and dispatch.

The author is indebted to R. C. Webster, Esq., Impost Clerk in the Boston Custom House, for his valuable money and exchange tables; and he has received many useful suggestions, and much assistance from celebrated accountants and experienced teachers, in the preparation of the work; for which, and the favorable notices of the same in manuscript, he is truly grateful, and tenders them his sincere thanks.

J. ROBINSON.

Boston, August, 1856.

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TESTIMONIALS.

Boston, April 7, 1856.

JAMES ROBINSON, Esq.

Dear Sir : — Having examined those portions of your work devoted to the different methods of computing interest, as well as the averaging of accounts, I feel no hesitation in saying that in both these important particulars, it is the most *complete* and *practical* treatise I have ever seen. As a book of reference on almost all mercantile questions it is invaluable, and no counting room should be without it.

Respectfully yours,

FRANCIS DRAKE,

Bookkeeper for Rice, Kendall & Co.

Having personal knowledge of Mr. Drake's competency to judge of the usefulness and value of the work referred to in his recommendation, I cheerfully concur in the opinion of its merits, which he has therein expressed.

ALEXANDER H. RICE,

Mayor of Boston.

Boston, April 7, 1856.

Boston, April 8, 1856.

Having cursorily examined the manuscript of Mr. Robinson's work, entitled *The Students' and Clerks' Manual*, I feel fully persuaded that its publication will be a valuable acquisition to counting houses, and of great use to all persons engaged in general mercantile pursuits.

ELISHA COPELAND,

City Auditor.

Boston, April 10, 1856.

MR. JAMES ROBINSON,

Author of "The Students' and Clerks' Manual."

Dear Sir: — I have examined the manuscript of your work, now about to be published, with much interest, and can cordially recommend the same as a most important adjunct for the counting room, but of more importance for academies and high schools. The principles of mathematics firmly imbedded in the head, gives great confidence, and right direction to youth. Your work explains the platform and gives a firm foundation to the mind, of the greatest principle in mathematics, being that of the *decimal*, which, when properly understood, a structure of any amount of knowledge can be attained with unerring certainty, and the decimal becomes the key stone of the arch, sustaining the whole fabric to the highest altitude, so long as truth shall be more important than error. Fully believing that the able manner in which you have presented this principle will entitle your work to be the class book in this department, I fully advise, with other friends, its publication. Our nation's progress in learning is onward; do not, however, be discouraged if your work be not sought for with avidity; you must bide your time; the day will come when our intelligent teachers will become more and more imbued with higher and yet higher desires in this delightful and important study.

Respectfully,

JOHN HARTSHORN,

Author of "Hartshorn's Commercial Tables,"

"Hartshorn's System of Bookkeeping," &c.

COMER'S COMMERCIAL COLLEGE.

We have cursorily looked over the manuscript of Mr. Robinson's proposed Manual for Students and Clerks, and from the short examination we have been enabled to make, consider it a very desirable aid to the class of persons for whom it is designed, its chief characteristics being that the examples are of practical utility, such as are in daily request by mercantile men.

Boston, April 2, 1856.

GEORGE N. COMER,
ANDREW C. DENISON, } *Principals.*
OLIVER E. LINTON, }

Boston, April 4, 1856.

We shall be glad to see Mr. Robinson's work introduced into every school in the country, believing it to be one of the best of its kind.

F. SKINNER & Co.

Boston, April 3, 1856.

We have looked at the various sheets of Mr. Robinson, intended to be a condensed system of instruction for young men preparing for the duties of the counting room, and should think it was well calculated for this purpose.

J. M. BEEBE, RICHARDSON & Co.

Boston, April 4, 1856.

I have no hesitation in saying that a work of the above description would afford great facility to those for whom it is intended.

J. W. BOURNE,

First Bookkeeper of the firm of James W. Paige & Co.

Boston, April 4, 1856.

We have examined the manuscript of Mr. Robinson's work, entitled *The Students' and Clerks' Manual*, and should think it well calculated for the instruction of young men preparing for the duties of the counting room; and the tables and other matter contained in it will render it useful as a book of reference.

MAYNARD & NOYES.

Boston, April 4, 1856.

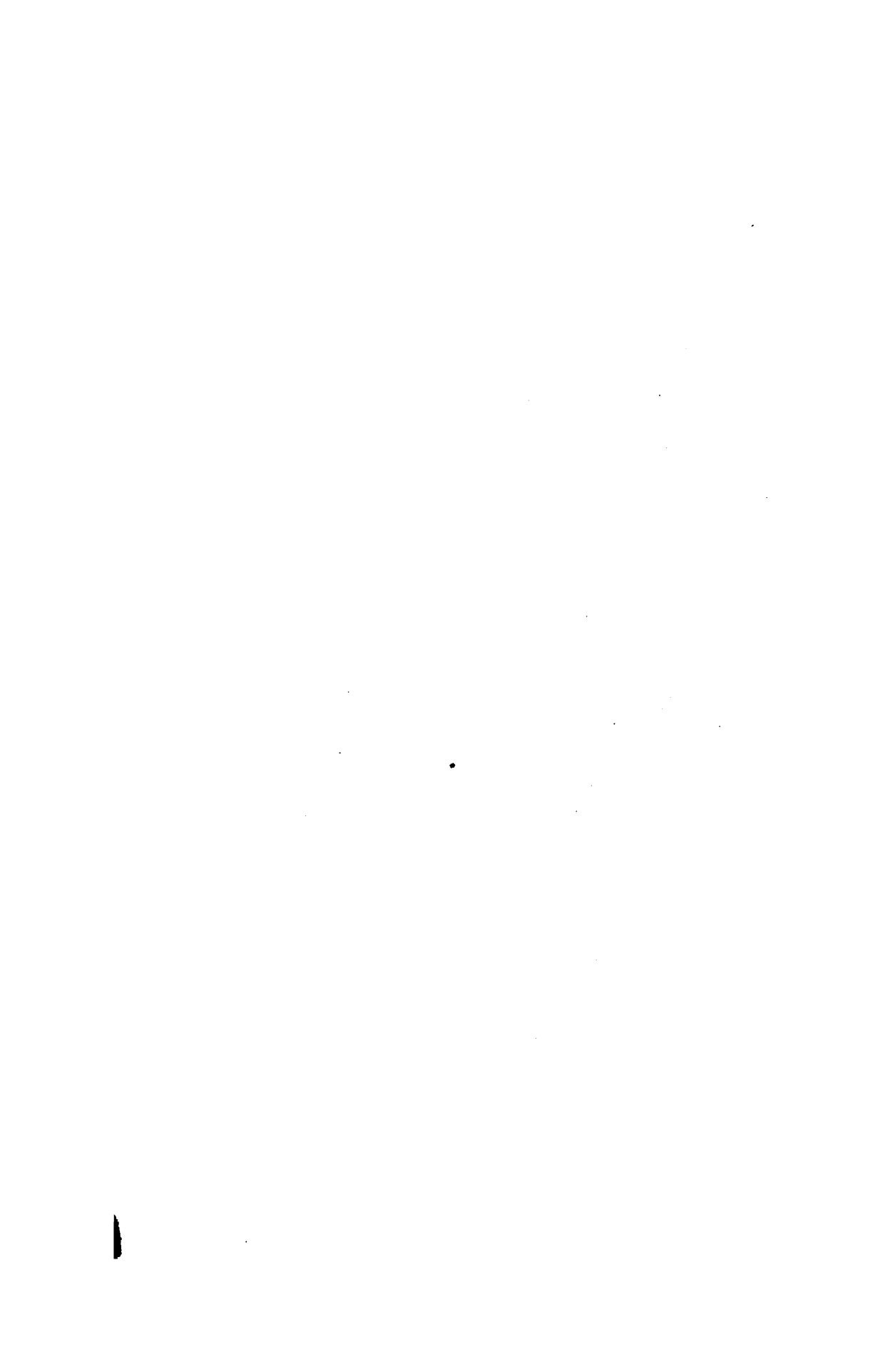
J. ROBINSON, Esq.

Dear Sir:—I have examined your rules for averaging accounts, intended to become a part of your new system of instruction for young bookkeepers, and judge them to be the best and most practical of any that I have consulted.

Yours truly,

ELVEN D. HALL,

First Bookkeeper with Levi Bartlett & Co.



T I M E T A B L E .

This table shows the number of months from January 1st to the 1st of each succeeding month in the same year, including January 1st of the next year. It shows, also, the number of days from January 1st to any other date of the same year, including January 1st of the next year.

From Jan. 1,		to Jan. 1, 12 mo.	
From Jan. 1,	to Feb. 1,	1 m	2 m
FROM Jan. 1 da.	FROM Jan. 1 da.	FROM Jan. 1 da.	FROM Jan. 1 da.
to Jan. 2 1	to Feb. 1 31	to Apr. 1 90	to May 1 120
to Jan. 3 2	to Feb. 2 22	to Apr. 2 91	to May 2 121
to Jan. 4 3	to Feb. 3 23	to Apr. 3 92	to May 3 122
to Jan. 5 4	to Feb. 4 24	to Apr. 4 93	to May 4 123
to Jan. 6 5	to Feb. 5 25	to Apr. 5 94	to May 5 124
to Jan. 7 6	to Feb. 6 26	to Apr. 6 95	to May 6 125
to Jan. 8 7	to Feb. 7 27	to Apr. 7 96	to May 7 126
to Jan. 9 8	to Feb. 8 28	to Apr. 8 97	to May 8 127
to Jan. 10 9	to Feb. 9 29	to Apr. 9 98	to May 9 128
to Jan. 11 10	to Feb. 10 30	to Apr. 10 99	to May 10 129
to Jan. 12 11	to Feb. 11 31	to Apr. 11 100	to May 11 130
to Jan. 13 12	to Feb. 12 32	to Apr. 12 101	to May 12 131
to Jan. 14 13	to Feb. 13 33	to Apr. 13 102	to May 13 132
to Jan. 15 14	to Feb. 14 34	to Apr. 14 103	to May 14 133
to Jan. 16 15	to Feb. 15 35	to Apr. 15 104	to May 15 134
to Jan. 17 16	to Feb. 16 36	to Apr. 16 105	to May 16 135
to Jan. 18 17	to Feb. 17 37	to Apr. 17 106	to May 17 136
to Jan. 19 18	to Feb. 18 38	to Apr. 18 107	to May 18 137
to Jan. 20 19	to Feb. 19 39	to Apr. 19 108	to May 19 138
to Jan. 21 20	to Feb. 20 40	to Apr. 20 109	to May 20 139
to Jan. 22 21	to Feb. 21 41	to Apr. 21 110	to May 21 140
to Jan. 23 22	to Feb. 22 42	to Apr. 22 111	to May 22 141
to Jan. 24 23	to Feb. 23 43	to Apr. 23 112	to May 23 142
to Jan. 25 24	to Feb. 24 44	to Apr. 24 113	to May 24 143
to Jan. 26 25	to Feb. 25 45	to Apr. 25 114	to May 25 144
to Jan. 27 26	to Feb. 26 46	to Apr. 26 115	to May 26 145
to Jan. 28 27	to Feb. 27 47	to Apr. 27 116	to May 27 146
to Jan. 29 28	to Feb. 28 48	to Apr. 28 117	to May 28 147
to Jan. 30 29	to Feb. 29 49	to Apr. 29 118	to May 29 148
to Jan. 31 30	to Feb. 30 50	to Apr. 30 119	to May 30 149
From Jan. 1	to Mar. 1 59	to May 31 160	to June 1 161
FROM Jan. 1 da.	FROM Jan. 1 da.	FROM Jan. 1 da.	FROM Jan. 1 da.
to Jan. 1 1	to Mar. 1 60	to May 1 120	to June 1 161
to Jan. 2 2	to Mar. 2 61	to May 2 121	to June 2 162
to Jan. 3 3	to Mar. 3 62	to May 3 122	to June 3 163
to Jan. 4 4	to Mar. 4 63	to May 4 123	to June 4 164
to Jan. 5 5	to Mar. 5 64	to May 5 124	to June 5 165
to Jan. 6 6	to Mar. 6 65	to May 6 125	to June 6 166
to Jan. 7 7	to Mar. 7 66	to May 7 126	to June 7 167
to Jan. 8 8	to Mar. 8 67	to May 8 127	to June 8 168
to Jan. 9 9	to Mar. 9 68	to May 9 128	to June 9 169
to Jan. 10 10	to Mar. 10 69	to May 10 129	to June 10 170
to Jan. 11 11	to Mar. 11 70	to May 11 130	to June 11 171
to Jan. 12 12	to Mar. 12 71	to May 12 131	to June 12 172
to Jan. 13 13	to Mar. 13 72	to May 13 132	to June 13 173
to Jan. 14 14	to Mar. 14 73	to May 14 133	to June 14 174
to Jan. 15 15	to Mar. 15 74	to May 15 134	to June 15 175
to Jan. 16 16	to Mar. 16 75	to May 16 135	to June 16 176
to Jan. 17 17	to Mar. 17 76	to May 17 136	to June 17 177
to Jan. 18 18	to Mar. 18 77	to May 18 137	to June 18 178
to Jan. 19 19	to Mar. 19 78	to May 19 138	to June 19 179
to Jan. 20 20	to Mar. 20 79	to May 20 139	to June 20 180
to Jan. 21 21	to Mar. 21 80	to May 21 140	to June 21 181
to Jan. 22 22	to Mar. 22 81	to May 22 141	to June 22 182
to Jan. 23 23	to Mar. 23 82	to May 23 142	to June 23 183
to Jan. 24 24	to Mar. 24 83	to May 24 143	to June 24 184
to Jan. 25 25	to Mar. 25 84	to May 25 144	to June 25 185
to Jan. 26 26	to Mar. 26 85	to May 26 145	to June 26 186
to Jan. 27 27	to Mar. 27 86	to May 27 146	to June 27 187
to Jan. 28 28	to Mar. 28 87	to May 28 147	to June 28 188
to Jan. 29 29	to Mar. 29 88	to May 29 148	to June 29 189
to Jan. 30 30	to Mar. 30 89	to May 30 149	to June 30 190
to Jan. 31 31	to Mar. 31 90	to May 31 150	to July 1 191
FROM Jan. 1 da.	FROM Jan. 1 da.	FROM Jan. 1 da.	FROM Jan. 1 da.
to Jan. 1 1	to Mar. 1 91	to May 1 150	to July 1 191
to Jan. 2 2	to Mar. 2 92	to May 2 151	to July 2 192
to Jan. 3 3	to Mar. 3 93	to May 3 152	to July 3 193
to Jan. 4 4	to Mar. 4 94	to May 4 153	to July 4 194
to Jan. 5 5	to Mar. 5 95	to May 5 154	to July 5 195
to Jan. 6 6	to Mar. 6 96	to May 6 155	to July 6 196
to Jan. 7 7	to Mar. 7 97	to May 7 156	to July 7 197
to Jan. 8 8	to Mar. 8 98	to May 8 157	to July 8 198
to Jan. 9 9	to Mar. 9 99	to May 9 158	to July 9 199
to Jan. 10 10	to Mar. 10 100	to May 10 159	to July 10 200
to Jan. 11 11	to Mar. 11 101	to May 11 160	to July 11 201
to Jan. 12 12	to Mar. 12 102	to May 12 161	to July 12 202
to Jan. 13 13	to Mar. 13 103	to May 13 162	to July 13 203
to Jan. 14 14	to Mar. 14 104	to May 14 163	to July 14 204
to Jan. 15 15	to Mar. 15 105	to May 15 164	to July 15 205
to Jan. 16 16	to Mar. 16 106	to May 16 165	to July 16 206
to Jan. 17 17	to Mar. 17 107	to May 17 166	to July 17 207
to Jan. 18 18	to Mar. 18 108	to May 18 167	to July 18 208
to Jan. 19 19	to Mar. 19 109	to May 19 168	to July 19 209
to Jan. 20 20	to Mar. 20 110	to May 20 169	to July 20 210
to Jan. 21 21	to Mar. 21 111	to May 21 170	to July 21 211
to Jan. 22 22	to Mar. 22 112	to May 22 171	to July 22 212
to Jan. 23 23	to Mar. 23 113	to May 23 172	to July 23 213
to Jan. 24 24	to Mar. 24 114	to May 24 173	to July 24 214
to Jan. 25 25	to Mar. 25 115	to May 25 174	to July 25 215
to Jan. 26 26	to Mar. 26 116	to May 26 175	to July 26 216
to Jan. 27 27	to Mar. 27 117	to May 27 176	to July 27 217
to Jan. 28 28	to Mar. 28 118	to May 28 177	to July 28 218
to Jan. 29 29	to Mar. 29 119	to May 29 178	to July 29 219
to Jan. 30 30	to Mar. 30 120	to May 30 179	to July 30 220
to Jan. 31 31	to Mar. 31 121	to May 31 180	to July 31 221
FROM Jan. 1 da.	FROM Jan. 1 da.	FROM Jan. 1 da.	FROM Jan. 1 da.
to Jan. 1 1	to Mar. 1 122	to May 1 180	to July 1 221
to Jan. 2 2	to Mar. 2 123	to May 2 181	to July 2 222
to Jan. 3 3	to Mar. 3 124	to May 3 182	to July 3 223
to Jan. 4 4	to Mar. 4 125	to May 4 183	to July 4 224
to Jan. 5 5	to Mar. 5 126	to May 5 184	to July 5 225
to Jan. 6 6	to Mar. 6 127	to May 6 185	to July 6 226
to Jan. 7 7	to Mar. 7 128	to May 7 186	to July 7 227
to Jan. 8 8	to Mar. 8 129	to May 8 187	to July 8 228
to Jan. 9 9	to Mar. 9 130	to May 9 188	to July 9 229
to Jan. 10 10	to Mar. 10 131	to May 10 189	to July 10 230
to Jan. 11 11	to Mar. 11 132	to May 11 190	to July 11 231
to Jan. 12 12	to Mar. 12 133	to May 12 191	to July 12 232
to Jan. 13 13	to Mar. 13 134	to May 13 192	to July 13 233
to Jan. 14 14	to Mar. 14 135	to May 14 193	to July 14 234
to Jan. 15 15	to Mar. 15 136	to May 15 194	to July 15 235
to Jan. 16 16	to Mar. 16 137	to May 16 195	to July 16 236
to Jan. 17 17	to Mar. 17 138	to May 17 196	to July 17 237
to Jan. 18 18	to Mar. 18 139	to May 18 197	to July 18 238
to Jan. 19 19	to Mar. 19 140	to May 19 198	to July 19 239
to Jan. 20 20	to Mar. 20 141	to May 20 199	to July 20 240
to Jan. 21 21	to Mar. 21 142	to May 21 200	to July 21 241
to Jan. 22 22	to Mar. 22 143	to May 22 201	to July 22 242
to Jan. 23 23	to Mar. 23 144	to May 23 202	to July 23 243
to Jan. 24 24	to Mar. 24 145	to May 24 203	to July 24 244
to Jan. 25 25	to Mar. 25 146	to May 25 204	to July 25 245
to Jan. 26 26	to Mar. 26 147	to May 26 205	to July 26 246
to Jan. 27 27	to Mar. 27 148	to May 27 206	to July 27 247
to Jan. 28 28	to Mar. 28 149	to May 28 207	to July 28 248
to Jan. 29 29	to Mar. 29 150	to May 29 208	to July 29 249
to Jan. 30 30	to Mar. 30 151	to May 30 209	to July 30 250
to Jan. 31 31	to Mar. 31 152	to May 31 210	to July 31 251
FROM Jan. 1 da.	FROM Jan. 1 da.	FROM Jan. 1 da.	FROM Jan. 1 da.
to Jan. 1 1	to Mar. 1 153	to May 1 210	to July 1 251
to Jan. 2 2	to Mar. 2 154	to May 2 211	to July 2 252
to Jan. 3 3	to Mar. 3 155	to May 3 212	to July 3 253
to Jan. 4 4	to Mar. 4 156	to May 4 213	to July 4 254
to Jan. 5 5	to Mar. 5 157	to May 5 214	to July 5 255
to Jan. 6 6	to Mar. 6 158	to May 6 215	to July 6 256
to Jan. 7 7	to Mar. 7 159	to May 7 216	to July 7 257
to Jan. 8 8	to Mar. 8 160	to May 8 217	to July 8 258
to Jan. 9 9	to Mar. 9 161	to May 9 218	to July 9 259
to Jan. 10 10	to Mar. 10 162	to May 10 219	to July 10 260
to Jan. 11 11	to Mar. 11 163	to May 11 220	to July 11 261
to Jan. 12 12	to Mar. 12 164	to May 12 221	to July 12 262
to Jan. 13 13	to Mar. 13 165	to May 13 222	to July 13 263
to Jan. 14 14	to Mar. 14 166	to May 14 223	to July 14 264
to Jan. 15 15	to Mar. 15 167	to May 15 224	to July 15 265
to Jan. 16 16	to Mar. 16 168	to May 16 225	to July 16 266
to Jan. 17 17	to Mar. 17 169	to May 17 226	to July 17 267
to Jan. 18 18	to Mar. 18 170	to May 18 227	to July 18 268
to Jan. 19 19	to Mar. 19 171	to May 19 228	to July 19 269
to Jan. 20 20	to Mar. 20 172	to May 20 229	to July 20 270
to Jan. 21 21	to Mar. 21 173	to May 21 230	to July 21 271
to Jan. 22 22	to Mar. 22 174	to May 22 231	to July 22 272
to Jan. 23 23	to Mar. 23 175	to May 23 232	to July 23 273
to Jan. 24 24	to Mar. 24 176	to May 24 233	to July 24 274
to Jan. 25 25	to Mar. 25 177	to May 25 234	to July 25 275
to Jan. 26 26	to Mar. 26 178	to May 26 235	to July 26 276
to Jan. 27 27	to Mar. 27 179	to May 27 236	to July 27 277
to Jan. 28 28	to Mar. 28 180	to May 28 237	to July 28 278
to Jan. 29 29	to Mar. 29 181	to May 29 238	to July 29 279
to Jan. 30 30	to Mar. 30 182	to May 30 239	to July 30 280
to Jan. 31 31	to Mar. 31 183	to May 31 240	to July 31 281
FROM Jan. 1 da.	FROM Jan. 1 da.	FROM Jan. 1 da.	FROM Jan. 1 da.
to Jan. 1 1	to Mar. 1 184	to May 1 240	to July 1 281
to Jan. 2 2	to Mar. 2 185	to May 2 241	to July 2 282
to Jan. 3 3	to Mar. 3 186	to May 3 242	to July 3 283
to Jan. 4 4	to Mar. 4 187	to May 4 243	to July 4 284
to Jan. 5 5	to Mar. 5 188	to May 5 244	to July 5 285
to Jan. 6 6	to Mar. 6 189	to May 6 245	to July 6 286
to Jan. 7 7	to Mar. 7 190	to May 7 246	to July 7 287
to Jan. 8 8	to Mar. 8 191	to May 8 247	to July 8 288
to Jan. 9 9	to Mar. 9 192	to May 9 248	to July 9 289
to Jan. 10 10	to Mar. 10 193	to May 10 249	to July 10 290
to Jan. 11 11	to Mar. 11 194	to May 11 250	to July 11 291
to Jan. 12 12	to Mar. 12 195	to May 12 251	to July 12 292
to Jan. 13 13	to Mar. 13 196	to May 13 252	to July 13 293
to Jan. 14 14	to Mar. 14 197	to May 14 253	to July 14 294
to Jan. 15 15	to Mar. 15 198	to May 15 254	to July 15 295
to Jan. 16 16	to Mar. 16 199	to May 16 255	to July 16 296
to Jan. 17 17	to Mar. 17 200	to May 17 256	to July 17 297
to Jan. 18 18	to Mar. 18 201	to May 18 257	to July 18 298
to Jan. 19 19	to Mar. 19 202	to May 19 258	to July 19 299
to Jan. 20 20	to Mar. 20 203	to May 20 259	to July 20 300
to Jan. 21 21	to Mar. 21 204	to May 21 260	to July 21 301
to Jan. 22 22	to Mar. 22 205	to May 22 261	to July 22 302
to Jan. 23 23	to Mar. 23 206	to May 23 262	to July 23 303
to Jan. 24 24	to Mar. 24 207	to May 24 263	to July 24 304
to Jan. 25 25	to Mar. 25 208	to May 25 264	to July 25 305
to Jan. 26 26	to Mar. 26 209	to May 26 265	to July 26 306
to Jan. 27 27	to Mar. 27 210	to May 27 266	to July 27 307
to Jan. 28 28	to Mar. 28 211	to May 28 267	to July 28 308
to Jan. 29 29	to Mar. 29 212	to May 29 268	to July 29 309
to Jan. 30 30	to Mar. 30 213	to May 30 269	to July 30 310
to Jan. 31 31	to Mar. 31 214	to May 31 270	to July 31 311
FROM Jan. 1 da.	FROM Jan. 1 da.	FROM Jan. 1 da.	FROM Jan. 1 da.
to Jan. 1 1	to Mar. 1 215	to May 1 270	to July 1 311
to Jan. 2 2	to Mar. 2 216	to May 2 271	to July 2 312
to Jan. 3 3	to Mar. 3 217	to May 3 272	to July 3 313
to Jan. 4 4	to Mar. 4 218	to May 4 273	to July 4 314
to Jan. 5 5	to Mar. 5 219	to May 5 274	to July 5 315
to Jan. 6 6	to Mar. 6 220	to May 6 275	to July 6 316</

TABLE,

Showing the Interest of One Dollar, at 6 per Cent for each day in the year of 360 days, expressed in the Decimal of a Dollar.

[illegible]

A COMPLETE TIME TABLE,

Showing the number of months, and the exact number of days, from any day in one month to the same day in any other month; very useful in computing Interest, averaging Bills, showing when Notes and Bills on time become due, &c.

From JAN.	{ To Months, Days,	Jan 12 365	Feb 1 31	Mar 2 59	Apr 3 90	May 4 120	June 5 151	July 6 181	Aug 7 212	Sept 8 243	Oct 9 273	Nov 10 304	Dec 11 334
FEB.	{ Months, Days,	Jan 11 334	Feb 12 365	Mar 1 28	Apr 2 59	May 3 89	June 4 120	July 5 150	Aug 6 181	Sept 7 212	Oct 8 242	Nov 9 273	Dec 10 303
MAR.	{ Months, Days,	Jan 10 306	Feb 11 337	Mar 12 365	Apr 1 31	May 2 61	June 3 92	July 4 122	Aug 5 153	Sept 6 184	Oct 7 214	Nov 8 245	Dec 9 275
APR.	{ Months, Days,	Jan 9 275	Feb 10 306	Mar 11 334	Apr 12 365	May 1 30	June 2 61	July 3 91	Aug 4 122	Sept 5 153	Oct 6 183	Nov 7 214	Dec 8 244
MAY,	{ Months, Days,	Jan 8 245	Feb 9 276	Mar 10 304	Apr 11 335	May 12 365	June 1 31	July 2 61	Aug 3 92	Sept 4 123	Oct 5 153	Nov 6 184	Dec 7 214
JUNE,	{ Months, Days,	Jan 7 214	Feb 8 245	Mar 9 273	Apr 10 304	May 11 334	June 12 365	July 1 30	Aug 2 61	Sept 3 92	Oct 4 122	Nov 5 153	Dec 6 182
JULY,	{ Months, Days,	Jan 6 184	Feb 7 215	Mar 8 243	Apr 9 274	May 10 304	June 11 335	July 12 365	Aug 1 31	Sept 2 62	Oct 3 92	Nov 4 123	Dec 5 153
AUG.	{ Months, Days,	Jan 5 153	Feb 6 184	Mar 7 212	Apr 8 243	May 9 273	June 10 304	July 11 334	Aug 12 365	Sept 1 31	Oct 2 61	Nov 3 92	Dec 4 123
SEPT.	{ Months, Days,	Jan 4 122	Feb 5 153	Mar 6 181	Apr 7 212	May 8 242	June 9 273	July 10 303	Aug 11 334	Sept 12 365	Oct 1 30	Nov 2 61	Dec 3 91
OCT.	{ Months, Days,	Jan 3 92	Feb 4 123	Mar 5 151	Apr 6 182	May 7 212	June 8 243	July 9 273	Aug 10 304	Sept 11 335	Oct 12 365	Nov 1 31	Dec 2 61
NOV.	{ Months, Days,	Jan 2 61	Feb 3 92	Mar 4 120	Apr 5 151	May 6 181	June 7 212	July 8 242	Aug 9 273	Sept 10 304	Oct 11 334	Nov 12 365	Dec 1 30
DEC.	{ Months, Days,	Jan 1 31	Feb 2 62	Mar 3 90	Apr 4 121	May 5 151	June 6 182	July 7 212	Aug 8 243	Sept 9 274	Oct 10 304	Nov 11 335	Dec 12 365

EXPLANATION.

EXAMPLES.—Required the number of days from March 4th to December 4th. Look for March at the left hand of the table, and trace the line along to the right, and under December stands 9, the number of months, and 275, the number of days. By adding or subtracting, as the case may be, when the date to which we wish to reckon is greater or less than the one we reckon from, we have the length of time between any two dates. Thus: Required the time from June 10th to October 17th. We see by the table that it is four months from June 10th to October 10th; and, by adding the 7 days from the 10th to the 17th, we have 4 months and 7 days. If the time from June 10th to October 6th be required, subtract the 4 days from the 6th to the 10th from 4 months, and we have three months and 26 days.

If the time is required from a given date to a *preceding* date, reckon from the earlier to the later date, the same as above, and you have the answer. Thus: Required the time from December 4th back to April 10th; reckon from April 10th to December 10th, and subtract the 6 days from the 4th to the 10th, and we have 7 months and 24 days.

When will a bill become due, dated July 10th, bought on 6 months? Look for July on the left, and trace the line along until you come to 6, and over it stands January, the answer.

What is the average *date* of an account that averages *due* January 10th, bought on 6 months? Look for January in the top line, and draw the finger down until you come to 6, and against this line at the left of the table stands July, the answer.

Merchants', Students', and Clerks' Manual.

ARTICLE I.

DECIMAL FRACTIONS.

IN the decimal scale of numbers, every significant figure expresses a number ten times *greater* than the same figure next on its right, and ten times *less* than the same figure next on its left.

Every significant figure expresses a number ten times *greater* by being removed one place towards the *left*, and ten times *smaller* by being removed one place towards the *right*.

There is no necessity of stopping the decimal scale of numbers at the place of *units* of the *first order* in whole numbers, but it may be extended *downward* without limit, as well as *upward*, and still preserve the same ratio between the successive *orders* of units.

If the unit 1 be divided into *ten* equal parts, each part is called *one tenth*; if one of these *tenths* be divided into *ten* equal parts, each part is called *one hundreth*; if one of these *hundredths* be divided into *ten* equal parts, each part is called *one thousandth*; and corresponding names are given to similar

equal parts, how far soever the division may be extended, which is shown to a limited extent in the following notation and numeration table.

Every equal part of the *integral unit* 1, may be called a *fractional unit*, and tenths, hundredths, thousandths, &c., may be called *fractional numbers*, having a fixed ratio to the *integral unit* 1, from which they are derived.

Tenths, hundreths, thousandths, &c., are called *decimal fractions* or simply *decimals*, from the Latin *decem*, ten. Hence, *decimal fractions are any number of tenths, hundreths, thousandths, &c., of a unit or integer.*

ARTICLE II.

A point called the *decimal point* is placed on the *left* of the tenths, to designate and separate them from integers or whole numbers; thus: .5 tenths, — 5.5 five and five tenths.

Annexing a cipher to a decimal changes it to the next lower order or denomination, but does not increase its size, because every significant figure continues to occupy the same place, thus: .5 tenths and .50 hundredths are equal to each other.

Prefixing a cipher to a decimal changes it also to the next lower order or denomination, and makes it ten times smaller by removing each significant figure farther from the decimal point; thus: .5 tenths is ten times greater than .05 hundreths.

ARTICLE III.

NOTATION AND NUMERATION OF DECIMAL FRACTIONS.

The relation of decimal numbers to whole numbers and to each other, also the names and places of the first nine orders of whole numbers and decimal numbers, are exhibited in the following table:

DECIMAL NOTATION AND NUMERATION TABLE.

9th order and place of	9	1	1	Hundred Millions.
8th order and place of	9	9	1	Ten Millions.
7th order and place of	9	9	9	1 Millions.
6th order and place of	9	9	9	1 Hundred Thousands.
5th order and place of	9	9	9	1 Ten Thousands.
4th order and place of	9	9	9	1 Thousands.
3d order and place of	9	9	9	1 Hundreds.
2d order and place of	9	9	9	1 Tens.
1st order and place of	9	9	9	1 Units.
Place of the dec. point	.	.	.	.
1st order and place of	9	9	9	1 Tenths.
2d order and place of	9	9	9	1 Hundredths.
3d order and place of	9	9	9	1 Thousandths.
4th order and place of	9	9	9	1 Ten Thousandths.
5th order and place of	9	9	9	1 Hundred Thousandths.
6th order and place of	9	9	9	1 Millionths.
7th order and place of	9	9	9	1 Ten Millionths.
8th order and place of	9	9	9	1 Hundred Millionths.
9th order and place of	9	9	9	1 Billionths.

WHOLE NUMBERS.

DECIMAL NUMBERS.

The above table consists of whole numbers and decimal numbers, which taken together are called mixed numbers. The numbers at the left of the decimal point are whole numbers, and those at the right of the decimal point are decimal numbers.

It may be observed that the numbers at the right and left of the place of units have corresponding names, except the decimal termination *th* in the singular number, and *ths* in the plural. It may also be observed that decimal numbers are read in the same manner as whole numbers are read, with the addition of the name of the lowest order or decimal place.

ARTICLE IV.

From the preceding illustrations and arrangement of the numbers in the table, we derive the following rule for reading decimal numbers.

RULE.—Read the decimal numbers in the same manner as you read whole numbers, and add the name of the last decimal place.

Application of the Rule.—.5 five tenths.—.05 five hundredths.—.555 five hundred fifty-five thousandths.—.999999999 nine hundred ninety-nine million, nine hundred ninety-nine thousand, nine hundred ninety-nine billionths.

When whole numbers and decimal numbers are combined, we first read the whole number, and then read the decimal number, thus: 125.125 one hundred and twenty-five, and one hundred twenty-five thousandths.

Decimal numbers to be written in words and read by students:

1.	.15	4.	.05015	7.	41.0040503
2.	.307	5.	1.04504	8.	509.91004054
3.	4.534	6.	34.16032	9.	45640.041650132

ARTICLE V.

To write or express decimal numbers by figures.

RULE.—First ascertain the number of places the decimal number must occupy when written correctly. Then write the decimal number as you would write it if it were a whole number, and prefix as many ciphers as are wanted to make the required number of decimal figures, then write the decimal point in its proper place.

Application of the Rule.—Suppose we are required to write nine hundred and five millionths. We first ascertain that this decimal will occupy six places, millionths being the 6th order, and occupying the 6th place in the table. We then write 905 as a whole number which occupies but three places. As six places are required to write this decimal number correctly, we prefix three ciphers to 905, and then write the decimal point in its proper place, thus: .000905.

Decimal numbers to be written or expressed by figures.

1. Five hundred and five *ten thousandths*.
2. Ten thousand three hundred and fifteen *hundred thousandths*.
3. Nine hundred and twenty-five *millionths*.
4. Two thousand and seventy-two *ten millionths*.
5. Five hundred and sixty-four *hundred millionths*.
6. Nine hundred and twenty-five *billionths*.

ARTICLE VI.

ADDITION OF DECIMAL FRACTIONS.

SINCE decimal fractions increase in a ten-fold ratio from right to left, like whole numbers, they may be added, subtracted, multiplied, and divided in the same manner.

The denominations of Federal money are purely decimal: dollars being integers or whole numbers; dimes, tenths of a dollar; cents, hundredths of a dollar; and mills, thousandths of a dollar; consequently, Federal money and decimal fractions are subject to the same methods of operation.

RULE.—Write the numbers to be added, placing whole numbers under whole numbers; tenths under tenths; hundredths under hundredths; thousandths under thousandths, &c. Find their sum, as in addition of whole numbers; and from the right point off so many figures for decimals as are equal to the greatest number of decimal figures in any of the given numbers.

1. What is the sum of .256, .575, .654, .945, and .844?

.256
.575
.654
.945
.844
—
3.274

Ans.

2. What is the sum of \$4.245, \$5.256, \$10.052, \$25.105, and \$44.444?

\$4.245
5.256
10.052
25.105
44.444
—

\$89.102 Ans.

3. What is the sum of 5.5, 25.25, 344.344, and 5000.005?

4. What is the amount of \$125.25, \$148.64, \$375.10, \$540.15, and \$750.75?

5. What is the amount of five hundredths, fifteen thousandths, twenty-five hundred thousandths, and seventy-five millionths?

ARTICLE VII.

SUBTRACTION OF DECIMAL FRACTIONS.

RULE.—Write the less number under the greater, placing whole numbers under whole numbers, tenths under tenths, hundredths under hundredths, &c. Then proceed, as in subtraction of whole numbers, and place the decimal point in the remainder, as in addition of decimal fractions.

1. Subtract .3785 from 10.5.

10.5000

.3785

Remainder, 10.1215

2. From \$236 take .125 of a dollar.

\$236.000

.125

Remainder, \$235.875

3. Subtract twenty-five thousandths from twenty-five thousand.

4. From 100 dollars take 75 dollars and twenty-five cents.

5. Take twenty-five millionths from twenty-five million.

ARTICLE VIII.

MULTIPLICATION OF DECIMAL FRACTIONS.

To multiply a decimal by a whole number.

To multiply a decimal number by a whole number, is to repeat the decimal number as many times as there are units in the whole number, thus: $.5 \times 5 = 25$ tenths, or 2.5. $.05 \times 5 = .25$ hundredths. $.005 \times 5 = .025$ thousandths. Hence, it is plain that the product of a decimal number multiplied by a whole number will be in the lowest order named in the given decimal,

or multiplicand, which may be changed to a whole number by placing the decimal point as many figures from the right in the product as it is in the multiplicand.

RULE.—Multiply as in whole numbers, and place the decimal point in the product, as many figures from the right as there are decimal figures in the multiplicand. When there are not as many figures in the product, prefix ciphers.

1. What will be the product of .00025 multiplied by 25?

$$\begin{array}{r} .00025 \\ 25 \\ \hline 125 \\ 50 \\ \hline .00625 \text{ Ans.} \end{array}$$

2. What is the value of 15 yards of silk at .625 of a dollar a yard?

$$\begin{array}{r} .625 \\ 15 \\ \hline 3125 \\ 625 \\ \hline \$9.375 \text{ Ans.} \end{array}$$

3. What will be the product of .0125 multiplied by 125?

4. What is the value of 1275 square feet of land, at .875 of a dollar a foot?

ARTICLE IX.

A mixed decimal number is multiplied by 10, 100, or 1000, by removing the decimal point as many places towards the right as there are ciphers in the multiplier. If there are not so many figures in the mixed decimal number, supply the deficiency by annexing ciphers, thus: $25.25 \times 10 = 252.5$. $25.25 \times 100 = 2525$. $25.25 \times 1000 = 25250$.

ARTICLE X.

To multiply a whole number by a decimal number.

When a whole number is multiplied by a decimal number, the product is less than the multiplicand in the same ratio that the decimal multiplier is less than a unit; thus: $12 \times .5 = 60$ tenths or 6 units. $12 \times .25 = 300$ hundredths or 3 units. Hence, to

multiply a whole number by a decimal number, is to find as great a part of the whole number as the decimal number is of a unit.

RULE.—Multiply as in whole numbers, and place the decimal point in the product so many figures from the right as there are decimal figures in the multiplier. When there are not as many figures in the product, supply the number wanting by prefixing ciphers.

1. What is the product of 20
× .05?

$$\begin{array}{r} 20 \\ \times .05 \\ \hline 1.00 \text{ Ans.} \end{array}$$

2. What must I pay for .25
hundreths of a vessel, valued at
\$24500?

$$\$24500 \times .25 = \$6125.00 \text{ Ans.}$$

3. A farmer raised 240 bushels of Indian Corn, and has sold .375 of it;
what number of bushels has he sold?

ARTICLE XI.

A whole number is multiplied by .1 tenth, .01 hundredth, or .001 thousandth, by pointing off so many of the right hand figures of the whole number as there are decimal figures in the multiplier. When there are not so many figures in the whole number prefix ciphers.

Thus: $10 \times .1 = 1.0$; $10 \times .01 = .10$; $10 \times .001 = .010$.

ARTICLE XII.

To multiply a decimal number by a decimal number.

To multiply a decimal number by a decimal number, is to find as great a part of the multiplicand as the multiplier is of a unit.
Thus: $.5 \times .5 = .25$.

In multiplying whole numbers, tens multiplied by tens produce hundreds; tens multiplied by hundreds produce thousands; hundreds multiplied by hundreds produce ten thousands.

In decimal numbers, tenths multiplied by tenths produce hundreths; tenths multiplied by hundreths produce thousandths;

hundreths multiplied by hundreths produce ten thousandths. Hence, this

RULE.—Multiply as in whole numbers, and point off so many figures in the product, counting from the right, as there are decimal figures in both factors. When there are not so many figures in the product, supply the deficiency by prefixing ciphers.

NOTE.—To multiply a mixed decimal number by a decimal number, or a mixed decimal number, apply the above rule.

1. What is the product of .005 multiplied by .05?

$$\begin{array}{r} .005 \\ .05 \\ \hline .00025 \text{ Ans.} \end{array}$$

2. Purchased .75 of a cord of wood at \$7.50 a cord; what did it cost?

$$\begin{array}{r} \$7.50 \\ .75 \\ \hline 3750 \\ 5250 \\ \hline \$5.6250 \text{ Ans.} \end{array}$$

3. Multiply 45.25 by .625.

4. A gentleman purchased 325.5 acres of land, and has sold .375 of the quantity purchased. What number of acres has he sold?

5. Bought 12.75 tons of coal at \$7.25 a ton; what did I pay for it?

6. A coal dealer purchased a cargo of coal weighing 1275.75 tons; he has sold .05 of it to one man, and .025 of it to another. What number of tons has he sold, and how many tons has he left?

ARTICLE XIII.

DIVISION OF DECIMAL FRACTIONS.

To divide a decimal number by a whole number.

To divide a decimal number by a whole number is to find what part of 1 time the decimal number will contain the whole number.

Illustration. Suppose we wish to divide .25 by 5, or to find one fifth of .25. It is plain that one fifth of .25 is .05, or that 5 is contained in .25 only .05 of 1 time.

RULE.—Divide as in division of whole numbers, and place the decimal point in the quotient so many figures from the right as there are decimal figures in the

dividend. If there are not so many figures in the quotient, prefix ciphers. When there is a remainder, annex ciphers and continue dividing until there is no remainder, or until the required number of decimal figures is obtained.

1. If .0125 be divided by 25, what will be the quotient?

25) .0125 (.0005 Ans.

125

2. Paid \$.875 of a dollar for 7 yards of cloth; what did it cost per yard?

7) .875

\$.125 Ans.

3. If .75 be divided by 200, what will be the quotient?

4. If .72 of a dollar be equally divided among 9 boys, what part of a dollar will each boy receive?

5. If .875 of an acre of land be divided into 25 house lots of equal size, what part of an acre will each lot contain?

NOTE.—To divide a mixed decimal number by a whole number, apply the above rule.

6. Divide 75.125 by 25.

| 7. Divide \$150.75 by 15.

ARTICLE XIV.

To divide a whole number by a decimal number.

To divide a whole number by a decimal number is to find the number of times the decimal number is contained in the whole number.

NOTE.—The quotient obtained by dividing a greater number by a smaller of the same kind or denomination, is a whole number. If units be divided by units, tenths by tenths, hundredths by hundredths, the quotient, in each case, will be a whole number, when there is no remainder.

Illustration. Suppose we wish to divide 5 by .25, or to find the number of times .25 is contained in 5. Annexing two ciphers to the whole number 5, thus: 5.00 changes the 5 to hundredths; and $5.00 \div .25 = 20$, the quotient, or number of times .25 is contained in the whole number 5. Hence the following

RULE.—Annex so many decimal ciphers to the dividend as there are decimal figures in the divisor, then divide as in division of whole numbers, the quotient will be a whole number if there is no remainder. When there is a remainder, place a decimal point at the right of the quotient, then annex ciphers to the remainder and continue dividing until there is no remainder, or until the required number of decimal figures is obtained.

1. How many times is .125 contained in the whole number 200?

.125) 200.000 (1600 Ans.

$$\begin{array}{r} 125 \\ \hline 750 \\ 750 \\ \hline 00 \end{array}$$

2. How many yards of silk can a lady purchase with 10 dollars, at 625 of a dollar a yard?

.625) 10.000 (16 Ans.

$$\begin{array}{r} 625 \\ \hline 3750 \\ 3750 \end{array}$$

3. Suppose .875 of a yard of silk to be a pattern for a vest, what number of vest patterns can be cut from a piece of silk which measures 21 yards?

ARTICLE XV.

To divide a decimal number by a decimal number.

To divide a decimal number by a decimal number is to find the number of times, or part of a time, that one decimal number is contained in another.

RULE.—Divide as in division of whole numbers, then point off so many of the quotient figures for decimals, counting from the right, as the number of decimal figures in the dividend exceed the number of decimal figures in the divisor. If there are not so many figures in the quotient, prefix so many ciphers as are needed to make the required number. When there are more decimal figures in the divisor than in the dividend, make them equal by annexing ciphers to the dividend before dividing; the quotient will be a whole number when the divisor is less than the dividend, and there is no remainder. When there is a remainder decimal ciphers may be annexed to it, and the division continued until nothing remains, or until the required number of decimal figures is obtained. When the dividend is less than the divisor, annex so many decimal ciphers to the dividend as will make it equal to or greater than the divisor, then divide as above directed; the decimal ciphers thus annexed, and those annexed to the remainder must be counted as decimal figures of the dividend.

NOTE. When either the dividend or divisor, or both of them are mixed decimal numbers apply the above rule.

1. If .625 be divided by .25, what will be the quotient?

.25) .625 (2.5 Ans.

$$\begin{array}{r} 50 \\ \hline 125 \\ 125 \end{array}$$

2. At \$1.25 a yard, how many yards can I buy with \$15.625?

\$1.25) 15.625 (12.5 Ans.

$$\begin{array}{r} 125 \\ \hline 312 \\ 250 \end{array}$$

3. What is the quotient of .00144 divided by 1.2?

$$\begin{array}{r} 625 \\ 625 \end{array}$$

4. Paid \$22.96 for 35.875 yards of silk, what was the cost of each yard?
 5. If 1.875 yards of broadcloth be sufficient to make a coat, how many coats can be made of 37.5 yards?

ARTICLE XVI.

When the divisor is 10, 100, or 1000, division is performed by removing the decimal point in the dividend so many places towards the left as there are ciphers in the divisor. Thus: $4.75 \div 10 = .475$; $47.5 \div 100 = .475$.

ARTICLE XVII.

PERCENTAGE.

Percentage is an allowance at a specified *rate per cent.* on any given sum of money, or quantity of merchandise; or it is any required number of *hundreths* of any given sum or quantity.

Thus: 6 per cent. of any sum of money is .06 hundreths of the sum; 12 per cent. of any quantity is .12 hundreths of the quantity.

Since percentage and per cent. signify hundreths, we can express any percentage, or any number of per cent. by a decimal fraction, thus:

1 per cent. = .01	50 per cent. = .50
2 per cent. = .02	75 per cent. = .75
3 per cent. = .03	100 per cent. = 1.00
4 per cent. = .04	106 per cent. = 1.06
5 per cent. = .05	125 per cent. = 1.25
6 per cent. = .06	$\frac{1}{2}$ per cent. = .002
7 per cent. = .07	$\frac{1}{4}$ per cent. = .0025
8 per cent. = .08	$\frac{1}{8}$ per cent. = .00125
9 per cent. = .09	$\frac{1}{3}$ per cent. = .00 $\frac{1}{3}$
10 per cent. = .10	$\frac{1}{2}$ per cent. = .005
15 per cent. = .15	$\frac{3}{4}$ per cent. = 00 $\frac{3}{4}$
20 per cent. = .20	$\frac{3}{4}$ per cent. = .0075
25 per cent. = .25	$\frac{1}{4}$ per cent. = .008
30 per cent. = .30	$\frac{7}{8}$ per cent. = .00875

ARTICLE XVIII.

Since, by multiplying any given sum or quantity by a decimal fraction, we obtain as great a part of the given sum or quantity for a product as the decimal fraction is of a unit, we can find the amount of any required per centage or number of per cent. of any given sum or quantity by the following

RULE.—Multiply the given sum or quantity by the decimal fraction expressing the required per cent., the product will be the amount of percentage.

1. What is 6 per cent. of \$500? $\$500 \times .06 = \30.00 Ans.
2. What is $8\frac{1}{2}$ per cent. of \$900? $\$900 \times .08\frac{1}{2} = \75.00 Ans.
3. What is $12\frac{1}{2}$ per cent. of £192? $\text{£}192 \times .125 = \text{£}24.000$ Ans.
4. What is 75 per cent. of 3200 pounds?
5. What is 5 per cent. of 2000 yards?

ARTICLE XIX.

The profits and losses of corporate bodies, of commission merchants, and brokers, of banking institutions and insurance companies, the computations of interest, discount, and duties, are all estimated at some specified rate per cent.

1. If I insure against loss by fire property valued at \$5000, at $\frac{1}{2}$ per cent., what is the amount of premium?
2. What is the amount of duty on an invoice of merchandise valued at \$500, at 40 per cent.?
3. The capital of a banking institution is \$750000. If a semi-annual dividend of $3\frac{1}{2}$ per cent. on the amount of capital is made, what is its amount?
4. If an agent purchases goods for his employer to the amount of \$750, and charges a commission of $2\frac{1}{2}$ per cent., what is the amount of his commission?

ARTICLE XX.

INTEREST.

Interest is a premium or percentage paid for the use of money.

The premium is a specified per cent., or number of hundredths of any given sum of money, which is paid for its use during a stated time.

In nearly all the United States the rate of interest established by law is 6 per cent. a year, and in the same ratio for a longer or shorter time.

The sum of money on which interest is paid, is the *principal*, the sum paid for its use is the *interest*, and the sum of the principal and interest is the *amount*.

When the rate of interest is 6 per cent. a year, the interest of one dollar for any given number of years will be as many times 6 cents as years.

Since the interest for one dollar for one year, or 12 months, is one half as many cents as months, the interest of one dollar for any given number of months will be one half as many cents as months.

Since the interest of one dollar for one year, or 360 days, is 6 cents, or 60 mills, which is one sixth as many mills as days in a year, the interest of one dollar for any given number of days will be one sixth as many mills as days.

The preceding definitions and illustrations furnish the following general rule for computing interest at 6 per cent. a year.

RULE.—Find the interest of one dollar for the given time, then multiply this interest by any given number of dollars, the product will be the interest of the given number of dollars for the same time.

1. What is the interest of \$1275 for 2 years 9 months and 27 days, at 6 per cent. a year?

.12	int. of \$1 for 2 years.
.045	int. of \$1 for 9 months.
.0045	int. of \$1 for 27 days.
<hr/>	
.1695	int. of \$1 for 2 years 9
1275	[mo. and 27 days.
<hr/>	
8475	
11865	
3390	
1695	
<hr/>	
\$216.1125	Ans.

In this question, we first find the interest of 1 dollar for 2 years, 9 mo., and 27 days, which is \$.1695; we then multiply this interest by \$1275, the given number of dollars, the product is the interest required.

2. What is the interest of \$175.75 for 3 years, 7 months, and 18 days, at 6 per cent. a year?

3. What is the interest of \$144.44 for 5 months and 15 days, at 6 per cent. a year?

NOTE.—The fourth figure at the right of the decimal point expresses *tenths* of a mill, the fifth *hundredths* of a mill, &c.

ARTICLE XXI.

When the rate of interest is more or less than 6 per cent. a year, first compute the interest at 6 per cent., and then make a proportional addition or subtraction. If it is 7 per cent. add one sixth; if 8 per cent., add one third; If 5 per cent. subtract one sixth; if $4\frac{1}{2}$ per cent., subtract one fourth.

ARTICLE XXII.

Since the interest of one dollar, at 6 per cent a year, for any given time, expresses that decimal part of one dollar which the interest is of one dollar for that time, so it must express that decimal part of any given number of dollars which the interest of that number of dollars will be for the same time. Therefore, if we multiply any given sum of money by that decimal part of a dollar which the interest is of one dollar for any given time, the product will be the interest of that sum for the same time.

Thus: the interest of one dollar for 2 years, 8 months, and 24 days, is .164 thousandths of a dollar; hence the interest of \$475 for the same time is .164 thousandths of \$475, and $\$475 \times .164 = \77.90 , the interest of \$475 for 2 years, 8 months, and 24 days.

It is often more convenient to multiply any given principal by that decimal part of a dollar which the interest is of one dollar for a given time, than it is to multiply the interest of one dollar for a given time by any given principal.

ARTICLE XXIII.

To find the interest of any given sum of money for any given number of months and days, at 6 per cent. a year.

RULE.—Multiply the given sum by one sixth of the number of days in the given number of months and days, the product will be the interest in mills, when

the given sum is dollars only; when there are cents in the given sum, the product will be the interest in hundredths of a mill.

NOTE.—To change mills to dollars, divide the number of mills by 1000, by pointing off three figures, counting from the right, the quotient or figures at the left of the decimal point, express the number of dollars; the first and second at the right of the point, the number of cents; the third, the number of mills.

To change hundredths of a mill to dollars, point off five figures, counting from the right.

N. B. The shortest method of finding one sixth of the number of days is, to annex a 0 cipher to half the given number of months, if even; if odd, annex 5 instead of a 0, and to this number add one sixth of the remaining days; the number thus found is equal to one sixth of the number of days in the given number of months and days.

Thus: One sixth of 8 months = 40 days.

One sixth of 9 months = 45 days.

One sixth of 10 months 7 days = $50 \times 1\frac{1}{2} = 51\frac{1}{2}$ days.

One sixth of 11 months 14 days = $55 \times 2\frac{1}{2} = 57\frac{1}{2}$ days.

One sixth of 12 months 21 days = $60 \times 3\frac{1}{2} = 63\frac{1}{2}$ days.

One sixth of 13 months 22 days = $65 \times 3\frac{1}{2} = 68\frac{1}{2}$ days.

One sixth of 14 months 29 days = $70 \times 4\frac{1}{2} = 74\frac{1}{2}$ days.

One sixth of 100 months 24 days = $500 \times 4 = 504$ days.

1. What is the interest of \$144 for 4 months and 24 days, at 6 per cent. a year? One sixth of 4 mo. 24 da. = $20 + 4 = 24$ days. $\$144 \times 24 = \3.456 , the interest, or answer.

2. What is the interest of \$624.24 for 27 days, at 6 per cent. a year? One sixth of 27 days = $4\frac{1}{2}$ da. $\$624.24 \times 4\frac{1}{2} = \2.80908 , the interest, or answer.

3. What is the interest of \$500 for 8 months and 18 days, at 6 per cent. a year?

4. What is the interest of \$288.48 for 8 years, 4 months, 25 days, at 6 per cent. a year?

N. B. It will make no difference in the result, whether we multiply the given sum by one sixth of the number of days, as above; or multiply the given sum by the number of days, and divide the product by 6.

One sixth of the number of days in any given number of months is found by multiplying the number of months by 5; thus: 11mo. $\times 5 = 55 =$ one sixth of the number of days in 11 months.

ARTICLE XXIV.

To find the interest on any given sum of money, at any given rate per cent., for any required time.

GENERAL RULE.—Multiply the principal by the rate per cent. expressed by a decimal, the product will be the interest for one year. To find the interest for two or more years, multiply the interest for one year by the given number of years, the product will be the interest for that number years. To find the interest for parts of a year, as months and days; for the months take aliquot parts of the interest for one year; and for days take aliquot parts of the interest for one month, allowing thirty days to the month.

Table of aliquot parts.

PARTS OF A YEAR.	PARTS OF A MONTH.
6 months = $\frac{1}{2}$ of a year.	15 days = $\frac{1}{2}$ of a month.
4 months = $\frac{1}{3}$ of a year.	10 days = $\frac{1}{3}$ of a month.
3 months = $\frac{1}{4}$ of a year.	6 days = $\frac{1}{4}$ of a month.
2 months = $\frac{1}{6}$ of a year.	5 days = $\frac{1}{6}$ of a month.
$1\frac{1}{2}$ months = $\frac{1}{8}$ of a year.	3 days = $\frac{1}{10}$ of a month.
1 month = $\frac{1}{12}$ of a year.	2 days = $\frac{1}{15}$ of a month.

1. What will be the interest of \$487.24 for 5 years, 7 months, and 15 days, at 6 per cent. a year?

\$487.24 principal.

.06 rate per cent.

6 mo. = $\frac{1}{2}$ \$29.2344 interest for 1 year.
5

\$146.1720 interest for 5 years.

1 mo. = $\frac{1}{12}$ 14.6172 interest for 6 months.

15 da. = $\frac{1}{8}$ 2.4362 interest for 1 month.

1.2181 interest for 15 days.

\$164.4435 interest for 5 yr., 7 mo. 15 da.

2. What is the interest of \$144.44 for 2 years, 9 months, and 27 days, at 5 per cent. a year?

3. What is the interest of \$75.75 for 1 year, 10 months, and 10 days, at 7 per cent. a year?

ARTICLE XXV.

Short practical methods of computing interest at 6 per cent. a year.

1st. $\$100 \div 6 = 16$ yr. 8 mo., or 200 mo., the time in which the interest of any given sum of money at 6 per cent. a year, will equal that sum. 1 yr. and 8 mos., or 20 mos. = 1 tenth of 200 months, hence the interest of any given sum of money for 20 mos. will equal 1 tenth of that sum; which is found by removing the decimal point one place towards the left; thus: the interest of \$48.25 for 20 months, is \$4.825.

Therefore, the interest of any sum of money for 10 mos. is $\frac{1}{2}$, for 5 mos. $\frac{1}{4}$, for 4 mos. $\frac{1}{5}$, for 2 mos. $\frac{1}{10}$ of the interest of the same sum for 20 months.

2d. 2 months = 1 hundredth of 200 months; hence, the interest of any given sum of money for 2 mos. will equal 1 hundredth of that sum, which is found by removing the decimal point two places towards the left; thus: the interest of \$75.25 for 2 months, or 60 days, is \$.7525.

Therefore, the interest of any sum of money for 20 da. is $\frac{1}{10}$, for 15 da. $\frac{1}{8}$, for 12 da. $\frac{1}{6}$, for 10 da. $\frac{1}{5}$, for 6 da. $\frac{1}{10}$, for 5 da. $\frac{1}{12}$, for 3 da. $\frac{1}{20}$, for 2 da. $\frac{1}{30}$ of the interest of the same sum for 2 months, or 60 days.

3d. 6 days = 1 thousandth of 200 mo., or 6000 days; hence, the interest of any given sum of money for 6 days, will equal 1 thousandth of that sum; which is found by removing the decimal point three places towards the left; thus: the interest of \$125.25 for 6 days, is \$.12525; the interest of \$10 for 6 days, is \$.010.

Therefore, the interest of any sum for one day, is $\frac{1}{6}$, for 2 da. $\frac{1}{3}$, for 3 days $\frac{1}{2}$, for 4 da. $\frac{2}{3}$, for 5 da. $\frac{5}{6}$ of the interest of the same sum for 6 days.

4th. As the interest of any given sum of money for 2 months, or 60 days, is equal to one half as many hundredths of that sum, as months; hence, the interest of any sum for any number of months will be equal to one half as many hundredths of that sum

as there are months; therefore, if the interest of any sum of money for 2 mo., or 60 da., be multiplied by one half of the given number of months, plus that fractional part which the given number of days is of 2 mo., or 60 days, the product will be the interest of that sum for that number of months and days; thus: the interest of \$25 for 2 mo., or 60 da., is \$.25; and for 9 mo. is $4\frac{1}{2}$ times \$.25, and $$.25 \times 4\frac{1}{2} = \1.125 .

1. What will be the interest of \$60 for 2 years, 6 months, and 27 days, at 6 per cent. a year?

\$.60 = interest of \$60 for 2 months.

$15\frac{2}{3}$ = one half the number of months.

300

60

9.00 = interest of \$60 for 2 years and 6 months.

.27 = interest of \$60 for 27 days.

\$9.27 = interest of \$60 for 2 years, 6 month, and 27 days.

ARTICLE XXVI.

To compute the time between any two given dates.

The usual method is to count the entire number of years, then the entire number of calendar months remaining, then the number of days remaining in that month in which they occur, also the number of days in the next month to the later date.

This method of computing time is unequal in its operation, for the calendar months, though varying in length from 28 to 31 days, are all reckoned as months of 30 days each.

By this method, the interest on four notes dated respectively on the 28th, 29th, 30th, and 31st of any one month, and paid on any one day between the 1st and 28th of March, of any year except leap year, would be computed for the same time.

The most accurate method of computing time, is to count the number of days in each calendar month, which is done in finding the date when a bill of merchandise will become due, when sold on a credit of a specified number of days.

ARTICLE XXVII.

To find the interest of sterling money at 5 per cent., for months.

The interest of £1 for 1 month is 1 penny, and in the same ratio for any part of £1. Therefore, find the interest of the given principal for 1 month, and multiply it by the given number of months, the product will be the required interest at 5 per cent.

1. What is the interest of £48 for 4 months, at 5 per cent. ?

The interest of £48 for 1 month is 48d. = 4s.

multiplied by 4

16s. the required int.

2. What is the interest of £365 15s. for 8 months, at 5 per cent. ?

The int. of £365 15s. for 1 mo., is 365½d. = £1 10 5½

multiplied by 8

£12 3 10 int. required.

3. What is the interest of \$125 7s. 6d. for 9 months, at 5 per cent. ?

The int. of £125 7s. 6d. for 1 month, is 125¾d. = 10s. 5¾d.

multiplied by 9

£4 14 0¾ int. required.

NOTE.—The interest of £1 for any number of days less than 30, at 5 per cent. a year, is as many thirtieths of a penny, as days. Thus: the interest of £1 for five days, is five thirtieths, or one sixth of a penny; for six days, one fifth of a penny; for ten days, one third; for fifteen days, one half; for twenty days, two thirds of a penny, &c.

ARTICLE XXVIII.

To find the interest of Sterling money at 5 per cent. a year, for any given number of years.

As the interest of £1 for 1 month is 1 penny, consequently the interest of £1 for 1 year is 1s.; therefore, multiply the principal by the given number of years, the product will be the interest in shillings; if there are shillings and pence in the given principal, add such part of a shilling to the product or interest in shillings, thus found, as the shillings and pence are of £1. Or, the interest of

each pound in any given principal for 1 year, at 5 per cent., is 1 shilling, and in the same ratio for any part of a pound.

1. What is the interest of £45 for 6 years, at 5 per cent. a year?

The interest of £45 for 1 year, is 45s. = £2 5s.

multiply by $\frac{6}{1}$

£13 10s. the interest required.

2. What is the interest of £245 7s. 6d. for 9 years and 4 months, at 5 per cent. a year?

The interest of £245 7s. 6d. for 1 year, is £12 5s. 4½d.

multiply by $\frac{9\frac{1}{3}}{1}$

£114 10 2 the int. required.

NOTE 1.—The interest of any amount of sterling money, at 6 per cent. a year, may be found by adding one fifth of the interest of the given sum at 5 per cent. for the given time, to itself; the sum will be the interest at 6 per cent.

NOTE 2.—In computing interest in England, the time is reckoned in years and days, allowing 365 days to the year; but never in months.

ARTICLE XXIX.

INTEREST AND BANK DISCOUNT.

Notes payable at the termination of a specified number of months, or days, are not due until 3 days after the time specified, called days of *grace*.

Bank Discount is the interest on a note for the time specified in the note, plus 3 days of *grace*, and this interest is deducted at the time the note is discounted. Thus: if a person has a note for \$600 discounted at a bank, for 60 days, he receives \$600 minus the interest of \$600 for 63 days, for which he must pay \$600 at the end of 63 days.

The interest of \$600 for 63 days, is \$6.30, and \$600 minus \$6.30 = \$593.70, the sum he receives from the bank. Suppose this person, at the time he receives this sum from the bank, puts it on interest for 63 days; at the termination of 63 days he receives the principal and interest. The interest of \$593.70 for 63 days, is \$6.23385 + \$593.70 = \$599.93385, the amount. Hence, he loses \$.06615 by the transaction, which is the interest of \$6.30 for 63 days.

1. A merchant has a note for \$1200 payable at the expiration of 90 days, which he gets discounted at a bank, and to oblige his friend, lends him the sum received from the bank, for the same time; the rate of interest and discount being the same, viz: 6 per cent.; what does the merchant lose by obliging his friend.

A trader from the country purchased goods to the amount of \$489.75 of a merchant in Boston, at his lowest cash prices. After purchasing the goods, the trader proposed to the merchant to give him his note for the amount, payable in 4 months, without interest. Yes, says the merchant, provided you will write the note for such an amount that the avails of the note shall amount to just \$489.75, after I shall get it discounted at a bank. For what amount must this note be written?

It is plain the note must be given for such a sum as will leave \$489.75 after the bank discount of it for 4 months and 3 days has been deducted from that sum. The interest of \$1 for 4 months and 3 days, at 6 per cent. a year, is \$.0205, and $\$1 - \$.0205 = \$.9795$; and $\$489.75 \div \$.9795 = \$500$, the required amount of the note. Hence, to find the amount for which a note must be given, payable at any future time, which shall leave any required sum after deducting the bank discount for the time specified, we have the following

RULE.—Find the bank discount of \$1 for the specified time, including three days of grace; deduct this bank discount from \$1; the remainder will be the present value of \$1 payable at the future specified time. Then divide the sum of money which you wish to obtain from the bank, by this present value of \$1; the quotient will be the amount of the required note.

Suppose I wish to obtain from a bank \$994.50 for 30 days and grace, when the rate of discount is 6 per cent. a year; for what amount must I give my note? Ans. \$1000.

ARTICLE XXX.

PARTIAL PAYMENTS.

When partial payments have been made and endorsed upon notes, or bonds, the following rule has been adopted by the Supreme Court of the United States, also by the Courts in

Massachusetts, New York, and by the Courts in most of the other States, for computing the interest. The rule is given in the language of Chancellor Kent of New York.

"The rule for computing interest on notes, when partial payments have been made, is to apply the payment, in the first place, to the discharge of the interest then due. If the payment exceeds the interest, the surplus goes towards discharging the principal, and the subsequent interest is to be computed on the balance of principal remaining due. If the payment be less than the interest, the surplus of interest must not be taken to augment the principal; but interest continues on the former principal until the period when the payments, taken together, exceed the interest due, and then the surplus is to be applied towards discharging the principal; and the interest is to be computed on the balance, as aforesaid."

\$1250.00

BOSTON, JAN. 1, 1855.

For value received, I promise to pay William Briggs, or order, twelve hundred and fifty dollars on demand, with interest.

JOHN SMITH.

The following partial payments were endorsed on this note.

April 1, 1855, received one hundred seventy-five dollars, seventy-five cts.

August 1, 1855, received twenty dollars.

November 1, 1855, received three hundred and sixty dollars.

What was the amount due on this note Jan. 1, 1856, interest 6 per cent.?

Principal, January 1, 1855,.....	.....	\$1250.00
First payment, April 1, 1855,.....	\$175.75	
Interest to April 1, 1855, (3 mo.).....	18.75	
Excess of payment above the interest,.....		\$157.00
Principal, or balance due after first payment,		\$1093.00
Second payment, August 1, 1855,.....\$20.00	\$380.00	
Third payment, November 1, 1855,....\$360.00		
Interest to August 1, 1855, (4 mo.)....\$21.86		
Interest to November 1, 1855, (3 mo.)..\$16.395	\$38.255	
Excess of the payments above the interest,.....		\$341.745
Principal, or balance due after the third payment,...		\$751.255
Interest to January 1, 1856, (2 mo.).....		\$7.513
Amount due on note January 1, 1856,.....		\$758.768

\$625.50

BOSTON, JULY 1, 1854.

For value received, I promise to pay Albert Simmons, or order,
Six hundred twenty-five dollars and fifty cents, in six months from date, with
interest after three months.

ISAAC GOODRICH.

On this note were the following endorsements:

January 1, 1855, received two hundred dollars.

November 1, 1855, received twenty dollars.

January 1, 1856, received three hundred dollars.

What will be the amount due on this note May 1, 1856,
interest at 6 per cent.?

ARTICLE XXXI.

The following rule is sometimes used, by merchants and others
for computing the interest on notes upon which partial payments
have been made.

RULE.—Compute the interest on the note from the time interest commenced
to the time of settlement, and find the amount. Then compute the interest on
each payment from the time it was paid to the time of settlement, and find the
amount of each. Lastly, subtract the total amount of the several payments from
the amount of the note, the remainder will be the balance due on the note.

1. A note dated January 1, 1855, was given for \$1000, payable
on demand, with interest at 6 per cent.; on which were the
following endorsements:

March 1, 1855, received seventy-five dollars.

July 15, 1855, received one hundred and twenty-five dollars.

September 25, 1855, received two hundred and fifty dollars.

November 10, 1855, received three hundred dollars.

What was the balance due on this note January 1, 1856?

ARTICLE XXXII.

DISCOUNT.

Discount is an allowance made for the payment of any sum
of money or debt, which is not on interest, before it is due; or
it is the difference between any given sum or debt, due at some
future time, and its present worth.

The *present worth* of any given sum or debt, due at a future time and not on interest, is that sum of money which, if on interest, would amount to the given sum or debt at the time it becomes due.

The interest of \$1.00 for one year, at 6 per cent., is 6 cents, and the amount is \$1.06; hence, \$1.00 is the present worth of \$1.06 due in one year, without interest, and 6 cents is the discount.

Therefore the present worth of any sum or debt due at the end of one year, without interest, is $\frac{100}{106}$ of the sum or debt, and the discount is $\frac{6}{106}$ of the sum. From the above illustration we obtain the following rules.

1. To FIND THE DISCOUNT.—Make the interest of \$1.00 at the given rate per cent. for the given time, the numerator of a fraction, and the amount of \$1.00 at the same rate and time the denominator; then multiply the given sum or debt by this fraction; the product will be the discount.

2. To FIND THE PRESENT WORTH.—Make \$1.00 the numerator of a fraction and the amount of \$1.00 at the given rate and time the denominator; then multiply the given sum or debt by this fraction, the product will be the present worth.

3. Or divide the given sum or debt by the amount of \$1.00 at the given rate and time, the quotient will be the present worth. Subtract the present worth from the given sum or debt, the remainder will be the discount.

1. Purchased goods to the amount of \$1224 on a credit of 4 months; what discount must be allowed for present payment, when the use of money is worth 6 per cent. a year?

$$\$1224 \times \frac{6}{106} = \$24, \text{ the discount required.}$$

$$\$1224 - \$24 = \$1200, \text{ the present worth.}$$

The interest of \$1200 for 4 months, is $\$1200 \times .02 = \24 , the interest.

2. What is the present worth of a note for \$2448 due at the end of 8 months, and not on interest, when the use of money is worth 6 per cent. a year?

$$\$2448 \times \frac{6}{106} = \$2353.846 +, \text{ the present worth.}$$

$$\$2448 - \$2353.846 +, = \$94.153 +, \text{ the discount.}$$

$$\$235.846 +, \times .04 = \$94.153 +, \text{ the interest.}$$

3. What is the present worth of the three following notes: One for \$960, due in three months; one for 400, due in six months; and the other for \$560, due in four months; no one of the notes being on interest?

4. What is the difference between the interest of \$750 for 18 months, at 6 per cent. a year, and the discount of the same sum for the same time?

NOTE.—The correct method of computing discount, is by the preceding rule; yet banking institutions and merchants, in discounting notes, deduct the interest on the note for the specified time, including three days of *grace*, for the discount.

5. A factor has in his possession \$525, and being directed to invest it in purchasing cotton, what sum can he invest, after deducting his commission of 5 per cent. on the purchase?

As his commission of 5 per cent. on every \$100 invested is \$5, if we add \$5 to \$100, the amount is \$105; hence the sum to be invested is $\frac{100}{105}$ of \$525, which is \$500.

6. My agent in England had in his hands \$3895, which I directed him to lay out in the purchase of railroad iron at \$95 a ton; how many tons did he purchase with the balance remaining to be invested, after deducting his commission of $2\frac{1}{2}$ per cent. on the purchase?

ARTICLE XXXIII.

INSURANCE.

Insurance is a contract or agreement, by which an individual or company engages, for a stipulated premium, to indemnify the person insured, from loss or damage to the property at risk by certain perils enumerated in the contract.

The individual or company who takes the risk, is called the *Insurer* or *Underwriter*; the person protected by the insurance is called the *Insured*; the sum paid is called the *Premium*; and the instrument containing the contract is called the *Policy*.

The premium is a specified per cent. or number of hundredths of the amount of property insured.

Marine Insurances are contracts to indemnify the owners of goods, vessels, and freight, from any stipulated loss which may arise from the destruction or injury of the ships, cargoes, or other property insured.

A premium of insurance is commonly for a specified voyage, as from one port to another, or to various ports; or from a ship's departure from a given port until her return.

To find the amount of premium in any one instance, we multiply the sum insured by the decimal fraction expressing the stipulated per cent., the product is the amount of premium.

1. A merchant obtained a policy of insurance on his stock of goods, against fire, to the amount of \$15000, at a premium of $2\frac{1}{4}$ per cent. a year; what amount of premium did he pay annually?

$\$15000 \times .025 = \375 , the answer.

2. A merchant in New Orleans shipped a cargo of cotton to Liverpool, valued at \$25000, and obtained a policy of insurance on the amount, at a premium of $2\frac{7}{8}$ per cent.; what was the amount of premium?

ARTICLE XXXIV.

To find the amount for which a policy should be taken to secure, if the property be destroyed, not only the value of the property insured, but also the premium paid for its insurance.

It is plain that the sum for which the policy should be taken, should be equal to the value of the property insured and premium paid for its insurance.

If I pay a premium of 2 per cent., lose my property, and receive the amount insured, I lose 2 per cent. of the amount insured, or two dollars on every \$100 thus insured, and secure only \$98 on every \$100 insured. Hence, I must take a policy for $\frac{100}{98}$ of the value of the property I wish to insure, to secure also the premium.

RULE.—Divide the value of the property to be insured by \$1.00, less the rate per cent. of insurance, the quotient will be the amount required.

Suppose I wish to insure property to the amount of \$9800, plus the premium of insurance at 2 per cent.; what must be the amount of the policy? $\$1.00 \times .02 = .02$, and $1.00 - .02 = .98$, and $\$9800 \div .98 = \10000 , the amount of the policy.

ARTICLE XXXV.

GENERAL REMARKS ON DISCOUNT AND PERCENTAGE.

Suppose the quantity of goods to be \$75, and a profit of \$25 be required. \$25 is added to \$75, and the goods are sold for \$100.

Therefore, to produce a profit of 25 per cent. of the gross price, or price for which goods are sold, one third of the cost or net value must be added. From this we obtain a universal rule for all fractions of the first cost, or net value of goods, which must be added to produce a profit of any required per cent. of the gross price, or price for which goods are sold.

RULE.—Make the required per cent. the numerator of a fraction, and 100 — the numerator, the denominator; this fraction will express the part of the cost which must be added.

To make a profit of $\frac{15}{100}$, $\frac{10}{100}$, $\frac{15}{100}$, $\frac{20}{100}$, $\frac{25}{100}$, $\frac{30}{100}$, $\frac{35}{100}$, $\frac{40}{100}$, $\frac{50}{100}$.

Add $\frac{3}{8}$, $\frac{1}{8}$, $\frac{1}{4}$, $\frac{2}{8}$, $\frac{2}{5}$, $\frac{3}{8}$, $\frac{3}{5}$, $\frac{2}{5}$, $\frac{1}{2}$.

Or $\frac{1}{3}$, $\frac{1}{4}$, $\frac{1}{3}$, $\frac{1}{2}$, $\frac{1}{2}$, $\frac{3}{4}$, $\frac{2}{3}$, $\frac{2}{3}$, $\frac{1}{2}$;

To make a profit of 5 per cent. on the cost, add $\frac{1}{20}$ of the cost, 10 per cent., $\frac{1}{10}$; 15 per cent., $\frac{3}{20}$; 20 per cent., $\frac{1}{5}$; 25 per cent., $\frac{1}{4}$; 30 per cent., $\frac{3}{10}$; 40 per cent., $\frac{2}{5}$; 50 per cent., $\frac{1}{2}$.

A. gives \$100 for a parcel of goods, with a reduction of 20 per cent. discount, or \$80 net. B. gives \$100 for a similar parcel, with a reduction of 30 per cent., or \$70 net. For the articles A. gives \$80, B. \$70. The question is, how much cheaper does B. buy than A.? How much less is \$70 than \$80? It is by the *larger* sum that the difference must be measured, because you wish to know how much per cent. the *smaller* sum is *less* than the *larger* one. Ten dollars, the difference, is $\frac{1}{8}$ of \$80; it is $\frac{1}{8}$ less, and $\frac{1}{8}$ of 100 is $12\frac{1}{2} = 12\frac{1}{2}$ per cent.; therefore B. buys $12\frac{1}{2}$ per cent. *less* than A.

If, however, the question had been reversed, and placed thus: how much dearer did A. pay for his goods than B? In this question it is with the *smaller* sum that the difference must be measured; you have to determine how much per cent. more \$80 is than \$70. The difference, \$10, is $\frac{1}{7}$ of \$70, and $\frac{1}{7}$ of \$100 is $14\frac{2}{7} = 14\frac{2}{7}$ per cent.

In this supposed transaction, therefore, B. purchases his goods $12\frac{1}{2}$ per cent. *lower* than A.; but A., paid $14\frac{2}{7}$ per cent. *higher* than B.

In measuring the difference of sums, numbers, or quantites, by percentages; it is important to bear this distinction clearly in mind; that it makes all the difference whether we compare the *larger* with the *smaller* amount, or the *smaller* with the *larger* amount.

Suppose A. and B. hold railroad stock; A. paid \$100 per share, and B. bought the same \$50 per share. The price that A. paid was double of that which B. paid; consequently 100 per cent. *dearer*. The price that B. paid was $\frac{1}{2}$ of that which A. paid; therefore, 50 per cent. *cheaper*.

ARTICLE XXXVI.

GENERAL AND PARTICULAR AVERAGES AND SALVAGE LOSSES.

"*General Averages* are contributions made by the owners of the ship, freight and cargo, to defray the value of any property on board, or belonging to the vessel, that is purposely thrown overboard, or destroyed for the preservation of the remainder; as also any expense which the general good of the whole may require to be incurred; as when, in cases of distress, there is a jettison of part of the cargo, or a cutting away of the masts, cable, &c. The owners of the property so destroyed also bear their part of the loss, and when this property has been insured, the underwriters are liable for the amount, however small it may be."

"*Particular Averages, or Partial Losses*, are the contributions to which the underwriters are liable, for the partial destruction of the property, by any of the accidents against which the insurance has been made; as when part of the goods are either damaged, or are wholly or partially destroyed, or when the whole of the goods are either damaged or partially destroyed by sea-water. When the property so damaged has been insured, the underwriters are liable for the actual or proportional loss, provided it is not exempted by the terms of the policy; as by the goods being warranted free of average, either entirely, or under a certain percentage."

"*Salvage Losses* are partial losses calculated as for total losses, with the deduction of the selling price of the goods preserved. The term salvage applies to the remuneration paid to those who assist in saving the vessel or cargo, when wrecked or in distress."

When losses occur from perils incident to the voyage, or when a sacrifice of some portion of the cargo, or of the ship *only* becomes necessary, these losses must be borne by the parties immediately interested, and are adjusted by a *particular* average.

In no instance can a *general* average be allowed, unless the sacrifice made was deemed indispensable by the captain and officers of the ship, to the general safety.

42 GENERAL AND PARTICULAR AVERAGES AND SALVAGE LOSSES.

In different countries different modes are adopted of valuing the articles which are to constitute a general average. In general, the value of the freight is the clear sum which the ship has earned, after seamen's wages, pilotage, and all such other charges as come under the name of petty charges, are deducted; one third, and in New York one half, being deducted for the wages of the crew.

The goods lost, as well as those saved, are valued at the price they would have brought in ready money at *the place of delivery* on the ship's arriving there; freight, duties, and all other charges being deducted; the goods lost bear their proportions, the same as the goods saved. The ship is valued at the price she would bring on her arrival at the port of delivery. But when the loss of masts, cables, and other furniture of the ship is compensated by general average, it is usual, as the new articles will be of greater value than the old, to deduct one third, leaving two thirds only to be charged to the amount to be contributed.

The usual mode of adjusting losses at sea is, first to find the percentage of loss, by dividing the total loss by the total value of the contributory interests, and multiplying this percentage by the amount of each individual interest.

1. "The brig *Cleopatra* sailed from London on the 17th of July, 1849, for New York, with a cargo of railroad iron. In tempestuous weather, the value of \$1950 was thrown overboard, and the vessel suffered damage to the amount of \$730. How should the loss be apportioned among the contributory interests? They were as follows: "

Contributory interests.	{	Value of Vessel,.....	\$21500	}	= \$20770
		Loss by damage,.....	730		
		Gross amount of freight,.....	\$2560		
		Diminished $\frac{1}{3}$ for seamen's wages,.....	853		
		CARGO.			
{	Shipped by Messrs. Roberts & Co.	\$678	}	= \$10500	
	“ “ Samuel Lane,.....	1396			
	“ “ Reynolds & Roscoe,..	2180			
	“ “ J. Wilkins,	3654			
	“ “ R. Jones,.....	1832			
	“ “ Roberts & Niles,.....	760			
			\$32977	total	
			contributory int.		
{	Thrown overboard,.....	\$1950	}	= \$2680 total loss.	
{	Damages to Vessel,.....	730			

\$2680	÷	32977	=	.08126	the loss per cent.
20770	×	.08126	=	1687.770	amount payable by ship.
1707	×	.08126	=	138.710	“ “ freight.
678	×	.0812	=	55.094	“ “ Roberts & Co.
1396	×	.08126	=	113.439	“ “ S. Lane.
2180	×	.08126	=	177.147	“ “ Reynolds & Roscoe.
3654	×	.08126	=	296.924	“ “ J. Wilkins.
1832	×	.08126	=	148.868	“ “ R. Jones.
760	×	.08126	=	61.758	“ “ Roberts & Niles.

2. “The brig Galveston in her passage from San Francisco to New York suffered a partial wreck, by which the captain was obliged to throw overboard a part of her cargo, amounting in value to \$4500, and the necessary repairs of the vessel cost \$1732. In addition to which, charges for pilotage, dockage, and board of seamen amounted to \$133. The contributory interests were as follows: vessel, \$28750; gross amount of freight, \$2960; cargo shipped by Roberts & Co., \$1608; by Fenelon & Rupert, \$2375; by Granger & Meyers, \$842; and by Southard & Hendrich, \$1365. Required the several shares of the loss.”

ARTICLE XXXVII.

AVERAGING PAYMENTS.

Averaging Payments is finding an *average* or *mean* time for the payment of several notes or sums due at different times; also, the time when the several items of *debit* and *credit*, in book accounts, will *average due*, so that no loss shall be sustained by either *debtor* or *creditor*.

To find the average or mean time for the payment of several notes for different sums, having the same date, which will become due at different times.

January 1, 1856. Suppose A. purchases merchandise of B. to the amount of \$500, of which A. is to pay \$50 in two months, \$125 in four months, \$175 in six months, and the remaining \$150 in nine months. What will be the

average or *mean* time for the payment of the several sums, or total amount? Suppose A. gives B. his note for the total amount, dated January 1, 1856, how many months credit should A. have on his note, and when will it become due?

Illustration and Operation.

A credit on \$50 for 2 months, is equal to a credit on \$1 for 100 months.	}	2 mo. × 50 = 100 mo.
A credit on \$125 for 4 months, is equal to a credit on \$1 for 500 months.	}	4 mo. × 125 = 500 mo.
A credit on \$175 for 6 months, is equal to a credit on \$1 for 1050 months.	}	6 mo. × 175 = 1050 mo.
A credit on \$150 for 9 months, is equal to a credit on \$1 for 1350 months.	}	9 mo. × 150 = 1350 mo.
		\$500 3000 mo.

Hence, it is evident that A. should have a credit on his note for \$500, equal to a credit on \$1 for 3000 months. A credit on \$500 will require only one five hundredth of 3000 months to equal a credit on \$1 for 3000 months; and $3000 \text{ mo.} \div 500 = 6 \text{ months}$, the time of credit on A.'s note; also the average time for the payment of the total amount, \$500. A.'s note will become due July 1, 1856.

Verification.—If A. does not pay B. \$50 until 4 mo. after it becomes due, he has had the use or interest of it 4 mo. at 6 per cent. = \$1.00. If A. does not pay B. \$125 until 2 mo. after it becomes due, he has had the use or interest of it 2 mo. = \$1.25; and $\$1.00 + \$1.25 = \$2.25$, the interest he gains.

If A. pays B. \$175 at the expiration of 6 mo., the time it becomes due, he neither gains nor loses any interest. If A. pays B. \$150 3 mo. before it becomes due, he loses the use or interest of it 3 mo. = \$2.25, which is equal to the interest he gains.

B. loses the use or interest of \$50 4 mo. = \$1.00, and the use or interest of \$125 2 mo. = $\$1.25 + \$1.00 = \$2.25$, his loss.

B. gains the use or interest of \$150 3 mo. = \$2.25, which is equal to the interest he loses.

Hence, we see that neither A. nor B. will sustain any loss by paying the total amount of the several sums at the expiration of six months, instead of paying the several sums as specified above.

From the preceding illustration we deduce the following

RULE.—Multiply each of the several sums by the time that must elapse before it will become due, and divide the amount of the several products by the total amount of the several sums, the quotient will be the average or mean time of payment.

A trader purchased goods to the amount of \$3000. He agreed to pay \$1200 in 30 days; \$800 in 60 days; and \$1000 in 90 days. What will be the average time for the payment of the amount?

ARTICLE XXXVIII.

“If any amount of merchandise purchased at one time, be made payable in several separate and equal amounts, succeeding each other at uniform intervals, if the number of payments is *odd*, the whole amount will average due at the time the *central* one is payable; but if the number of payments is *even*, then the whole amount will average due at a point of time *midway* between the times of the two central payments.”

If a note be given for the amount of each equal sum, each note should be dated at the time of purchase.

Illustration.—1. If I purchase merchandise, valued at \$600, on condition that I pay \$200 in 2 months, \$200 in 4 months, and \$200 in 6 months; if I prefer to pay the whole amount at one time, what will be the average time of payment?

The time of the central payment is 4 months, consequently the whole amount, \$600, will average due in 4 months.

2. A merchant purchased a quantity of goods, valued at \$2000, and gave 4 notes of \$500 each, at 2, 4, 6, and 8 months, for payment. At what time will these 4 notes average due?

One of the two central notes will become due in 4 months, the other in 6 months. The time *midway* between 4 months and 6 months, is 5 months; hence, the whole amount will average due in 5 months.

Each of the above results may be verified by the rule in the preceding Article.

ARTICLE XXXIX.

To find the time when the total amount of several bills of merchandise, unequal in amount, and purchased at different times, but on an equal term of credit, will average due.

RULE.—Find the date at which each bill will become due, and arrange the amounts in the order of time they fall due. Then find the number of days intervening between the date earliest due, and each succeeding date; multiply the amount of each bill by the number of days thus found, and divide the sum of the several products by the total amount of all the bills; the quotient will be the average number of days, which counted forward from the date earliest due, will give the date when the total amount of all the bills will average due.

NOTE.—The number of days intervening between any two dates, is readily found in the Time Table.

1. Samuel Johnson purchased of A. & A. Lawrence & Co., the following bills of merchandise on a credit of six months.

1855, May 1, a bill amounting to \$150.25, due November 1, 1855.

1855, June 10, a bill amounting to \$175.75, due December 10, 1855, or 39 days from November 1, 1855.

1855, July 20, a bill amounting to \$240.44, due January 20, 1856, or 80 days from November 1, 1855.

1855, September 5, a bill amounting to \$374.56, due March 5, 1856, or 125 days from November 1, 1855.

When will the total amount of the above bills average due ?

Operation.

\$150.25	The amount of this bill, due Nov. 1, 1855, the earliest date, (the intervening days being counted from this date,) has no product, but it must be added with the other amounts.		
\$175.75	×	39	= 6854.25
\$240.44	×	80	= 19235.20
\$374.56	×	125	= 46820.00

Total amt. bills \$941.00 72909.45 Amt. of products.

72909.45 ÷ 941.00 = 76 + the average number of days from Nov. 1, 1855.

NOTE.—Accountants usually disregard the cents if less than 50, and call them a dollar if more than 50.

The computation above gives the time of *average maturity*. To find the *average date* of all the bills, we must make a similar computation from the *earliest date*. If a note be given for the whole amount of all the bills, its *date* should be the *average date*.

2. William Jones purchased of Henry Wilson the following bills of merchandise on a credit of 4 months.

July 5, 1855,	a bill amounting to	\$140.25
Aug. 10,	" " "	\$195.75
Sept. 15,	" " "	\$210.40
Oct. 20,	" " "	\$250.60
Nov. 25,	" " "	\$325.00

When will the total amount of the above bills average due?

N. B. The *average date* of the above bills will be four months *earlier* than the date at which they will *average due*.

3. William Bancroft purchased the following bills of merchandise of James M. Beebe & Co.

Sept. 1, 1855,	a bill amounting to	\$200 on 6 months credit.
Oct. 10,	" " "	\$350 on 4 months credit.
Nov. 15,	" " "	\$445 on 3 months credit.
Dec. 20,	" " "	\$544 on 2 months credit.

At what time will the above bills average due? Suppose Mr. Bancroft gave his note for the total amount of all the bills, dated January 1, 1855, what will be the date of its maturity?

NOTE.—The rule in this Article will apply in finding the time when several bills of merchandise, purchased at different times, and on different terms of credit, will *average due*.

ARTICLE XL.

A convenient and accurate method of finding the time when several bills of merchandise, purchased at different times, will average due, is based on interest, which is shown in the following illustrations.

If the total amount of interest on several bills of merchandise, the interest on each bill being computed from the first day of that month in which the first bill was purchased, until it will

become due, be divided by the total amount of the several bills, the quotient will be the average interest on each dollar of that amount; and against the interest in the columns marked months and days, see interest table, p. 10, stands the *average* time that will be required for the total amount of the several bills to gain the total amount of interest on the several bills, which will be the *true average* time of credit, counting from the first day of that month in which the first bill was purchased, also the time when the total amount of all the bills will become due, counting from the same date.

Or if the total amount of interest on the several bills be divided by the interest on the total amount of the several bills for one year, month, or day, according as the time of credit is expressed; the quotient will be the *true average time* of credit, counting from the first day of that month in which the first bill was purchased.

NOTE.—Any other date may be taken to compute and count from, and a corresponding result will be obtained; but the first day of that month in which the first bill was purchased is the most convenient date, as the number of months from that date is readily found, and the number of days is the same as the date of the bill, less one.

1. The following bills of merchandise were purchased on a credit of six months. What will be the average time of credit, counting from January 1, 1856. Suppose a note to be given for the total amount, dated May 1, 1856, when will it be due?

1856.		THOMAS WORTHINGTON, DR.			
0mo. Jan.	16.	For merchandise, 6 mo. \$	75,	due in 6 mo. 15 da., int.	\$2.44
" "	25.	" "	112,	" 6 mo. 24 da., "	3.81
1mo. Feb,	19.	" "	140,	" 7 mo. 18 da., "	5.32
" "	28.	" "	110,	" 7 mo. 27 da., "	4.35
2mo. Mar.	13.	" "	130,	" 8 mo. 12 da., "	5.46
" "	19.	" "	175,	" 8 mo. 18 da., "	7.52
3mo. April	10.	" "	144,	" 9 mo. 9 da., "	6.70
" "	25.	" "	165,	" 9 mo. 24 da., "	8.09

Total amount of bills, \$1051 Total amount of int. \$43.69

$\$43.69 \div \$1051 = .04157 +$; against this quotient in the interest table, is 8 mo. 9 da, the average time of credit, counting from Jan. 1, 1856, the time in which \$1051 will gain \$43.69 interest.

Or $\$1051 \times .005 = \5.255 , int. for 1 month, and $\$43.69 \div 5.255 = 8$ mo. 9 da. +, the average time of credit, counting from January 1, 1856, and the total amount of all the bills will average due September 10, 1856.

From Jan. 1, to May 1, is 4 mo., and 8 mo. 9 da. — 4 mo. = 4 mo. 9 da., the time of credit on the note, and the note will be due Sept. 13, 1856, 3 days grace included.

ARTICLE XLI.

Bills on unequal times of credit, and Cash bills.

2. 1856.		FISK & CUSHING, Dr.			
0mo. May	10.	For merchandise,	6 mo. \$ 95,	due in 6 mo. 9 da.,	int. \$2.99
	25.	"	4 mo. 120,	" 4 mo. 24 da.,	" 2.88
1 mo. June	19.	"	cash 150,	" *1 mo. 18 da.,	" 1.20
	28.	"	6 mo. 175,	" 7 mo. 27 da.,	" 6.91
2 mo. July	13.	"	3 mo. 210,	" 5 mo. 12 da.,	" 5.67
	19.	"	cash 235,	" 2 mo. 18 da.,	" 3.06
3 mo. Aug.	10.	"	4 mo. 320,	" 7 mo. 9 da.,	" 11.68
	25.	"	6 mo. 450,	" 9 mo. 24 da.,	" 22.05
Total amt. of bills, \$1755				Total amt. of int. \$56.44	

$\$56.44 \div \$1755 = .03216$ nearly, against which in the interest table, is 6 mo. 13 da. the average time of credit, counting from May 1, 1856, and the total amount of all the bills will average due November 14, 1856.

$\$1755 \times .005 = 8.775$, int. for 1 month, and $\$56.44 \div \$8.775 = 6$ mo. 13 da. nearly, the average time of credit, counting from May 1, 1856, the time in which \$1755 will gain \$56.44 interest.

3. Purchased the following bills of merchandise on a credit of 6 months. Jan. 7, 1856, a bill amounting to \$225; Jan. 28, a bill amounting to \$244; Feb. 10, a bill amounting to \$146; Feb. 28, a bill amounting to \$216; March 13, a bill amounting to \$236; March 19, a bill amounting to \$175; April 10, a bill amounting to \$215; April 19, a bill amounting to \$240.

When will the above bills average due, counting from January 1, 1856?

* The average date and average due of all cash bills are the same.

4. A merchant purchased of a manufacturer the following bills of goods. June 16, 1856, a bill of \$120, on a credit of 120 days; July 19, a bill of \$140, on a credit of 180 days; Aug. 22, a bill of \$175, on a credit of 90 days; Aug. 28, a bill of \$148 on a credit of 60 days; Sept. 16, a bill of \$195, on a credit of 150 days; Sept. 25, a bill of \$300, on a credit of 30 days.

What will be the average time of credit on the above bills; and when will the total amount average due, counting from June 1, 1856?

5. Jonas Merriam & Co., purchased of Silas Pierce, as follows: Sept. 16, 1855, 400 lbs. of tea @ 35 cents, on a credit of 6 months; Sept. 25, 540 lbs. of Coffee @ 12 cents, on a credit of 4 months; Oct. 7, 540 lbs. of Sugar @ 8 cents, on a credit of 5 months; Oct. 13, 10 bbls. of Flour @ 10.50 cash; Nov. 10, 375 lbs. of Rice at 5 cents, on a credit of 3 months; Nov. 28, 120 gallons of Molasses at 35 cents, cash.

When will the total amount of the above articles average due?

6. Andrew Wellington sold Rufus Putnam the following articles of Produce. Oct. 13, 1855, 1275 lbs. of Cheese @ 10 cents, on a credit of 120 days; Oct. 19, 750 lbs. of Butter @ 26 cents, on a credit of 90 days; Nov. 10, 1250 lbs. of Pork @ 8 cents, on a credit of 60 days; Nov. 25, 75 bushels of Potatoes @ 75 cents, on a credit of 30 days; Dec. 25, 15 bbls. Apples @ \$1.75, on a credit of 30 days.

When will the total amount of the above articles average due?

ARTICLE XLII.

The following bills of merchandise, amounting to \$382, were sold at various times from July 1, to December 31, 1855, inclusive, for cash, but they were allowed to run until the close of the year, at which time they were settled. When does the total amount average due?

The *average* date of the sales and amount of interest is obtained as follows :

1855.

		Days.	Product.	EXPLANATION.
July	1, a bill of \$ 2			
	5, "	31 × 4 =	\$124	The amount of each bill is
	10, "	19 × 9 =	171	multiplied by the number of
	21, "	42 × 20 =	840	days intervening between the
	31, "	17 × 30 =	510	date of the first bill and the
Aug.	8, "	11 × 38 =	418	date of each succeeding bill,
	17, "	10 × 47 =	470	and the total amount of the
	25, "	9 × 55 =	495	products is divided by the total
	30, "	13 × 60 =	780	amount of all the bills, the quo-
Sept.	3, "	18 × 64 =	1152	tient is the time when all the
	9, "	20 × 70 =	1400	bills will average due, counting
	16, "	16 × 77 =	1232	from July 1, 1855.
	27, "	14 × 88 =	1232	N. B. The average <i>date</i> of
Oct.	4, "	31 × 95 =	2945	all cash bills, and average <i>due</i>
	11, "	27 × 102 =	2754	are the same.
	29, "	8 × 120 =	960	Thus it appears that the total
Nov.	2, "	17 × 124 =	2108	amount of all the bills, \$382,
	13, "	13 × 135 =	1755	will become due 78 days from
	22, "	16 × 144 =	2304	July 1, 1855, which will be
Dec.	8, "	21 × 160 =	3360	Sept. 17, 1855, from which
	15, "	15 × 167 =	2505	date the interest on \$382 is to
	31, "	12 × 183 =	2196	be added to Dec. 31, 1855,
		<u>\$382</u>	<u>\$29711</u>	which is 3 mo. 14 days. The
				interest on \$382 for 3 months,

14 days, is $\$6.62 + \$382 = \$388.62$, the amount due Dec. 31, 1855.

382)	29711	(77
	2674	1
	<u>2971</u>	78
	2674	
	<u>297</u>	

When the remainder is more than one half of the divisor, add 1 in all cases. If these bills had been sold on a credit of 4 months, they would average due Jan. 17, 1856. And if on a credit of 6 or 8 months, they would average due March 17, and May 17, 1856.

2. Purchased the following bills of merchandise for cash, but they were allowed to run until June 30, 1856, at which time a settlement was made.

When will the amount of all the bills *average due*, and what amount will the purchaser have to pay including interest?

Jan. 10, 1856, a bill of \$25; Jan. 15, a bill of \$30; Feb. 12, a bill of \$15; Feb. 25, a bill of \$24; Mar. 5, a bill of 16; Mar. 18, a bill of \$32; April 9, a bill of \$8; April 18, a bill of \$14; May 1, a bill of \$32; May 17, a bill of \$6; June 10, a bill of \$18; June 30, a bill of \$30.

ARTICLE XLIII.

We will now take the same date and amount of each bill in Article 42, and sold on various terms of credit, say cash, 1 mo., 2 mo., 3 mo., 4 mo., 5 mo., 6 mo., 7 mo., 8 mo., and 9 mo., and find the time when the total amount of all the bills will average due.

1855.				1856.			
July	1,	a bill of \$2 on a credit of 6 mo., due Jan. 1, 1856.		July	10,	bill \$19	
	5,	" 31	3 mo., " Oct. 5, 1855.	Oct.	5,	" 31 × 87 = \$2697	
	10,	" 19	Cash, " July 10, 1855.		9,	" 20 × 91 = 1820	
	21,	" 42	3 mo., " Mar. 21, 1856.	Nov.	16,	" 16 × 129 = 2064	
	31,	" 17	5 mo., " Dec. 31, 1855.	Dec.	3,	" 18 × 146 = 2628	
Aug.	8,	" 11	4 mo., " Dec. 8, 1855.		8,	" 11 × 151 = 1661	
	17,	" 10	7 mo., " Mar. 17, 1856.		31,	" 29 × 174 = 5046	
	25,	" 9	8 mo., " Apr. 25, 1856.				
	30,	" 18	6 mo., " Feb. 29, 1856.	1856.			
Sept.	3,	" 18	3 mo., " Dec. 3, 1855.	Jan.	1,	" 2 × 175 = 350	
	9,	" 20	1 mo., " Oct. 9, 1855.		4,	" 31 × 178 = 5518	
	16,	" 16	2 mo., " Nov. 16 1855.		8,	" 21 × 182 = 3822	
	27,	" 14	6 mo., " Mar. 27, 1856.	22,	" 16 × 196 = 3136		
Oct.	4,	" 31	3 mo., " Jan. 4, 1856.	Feb.	13,	" 18 × 218 = 2884	
	11,	" 27	7 mo., " May 11, 1856.		29,	" 18 × 234 = 3042	
	29,	" 8	9 mo., " July 29, 1856.	Mar.	17,	" 10 × 251 = 2510	
Nov.	2,	" 17	5 mo., " Apr. 2, 1856.		21,	" 42 × 255 = 10710	
	13,	" 18	3 mo., " Feb. 13, 1856.	27,	" 14 × 261 = 3654		
	22,	" 16	2 mo., " Jan. 22, 1856.	Apr.	2,	" 17 × 267 = 4539	
Dec.	8,	" 21	1 mo., " Jan. 8, 1856.		15,	" 15 × 280 = 4200	
	15,	" 15	4 mo., " Apr. 15, 1856.	25,	" 9 × 290 = 2610		
	31,	" 12	Cash, " Dec. 31, 1855.	May	11,	" 27 × 306 = 8262	
				July	29,	" 8 × 335 = 3060	
\$382				\$74183			

$\$74183 \div \$382 = 194 + \text{days}$, the time when the total amount of sales will average due, counting from July 10, 1855, gives Jan. 20, 1856.

Explanation of the above operation.—We first found the date at which each bill would become due. We then arranged them in the order of time they became due, and multiplied the amount

of each bill by the number of days intervening between the date of the bill that first became due, and each succeeding date; lastly, we divided the amount of the products by the amount of the bills; the quotient is the number of days, counting from the date of the bill that first became due, when the amount of all the bills will average due, which gives January 20, 1856, the date when the total amount of all the bills will average due.

NOTE.—The author is indebted to George Holbrook, Esq., the celebrated Boston Accountant, for the above example and its solution, also for the preceding example.

ARTICLE XLIV.

The rules usually given for averaging payments are founded on the supposition that the interest of the money that is not paid until after it is due, is equal to the discount of an equal sum which is paid before it becomes due. The discount of the same sum for the same time is less than the interest; hence, the rules usually given are not strictly accurate. The difference between the interest and the discount of the same sum for the same time, if the sum is not very large, and the time not long, is so small that the rules usually given are used by accountants.

It is equitable that *interest* should be required on all debts from the time they become due until they are paid; and it is also equitable that nothing more than the *present worth* of all debts paid before they become due should be required. Hence, the following accurate rule.

RULE.—Find the sum of the present values of the several debts; also, the sum of their discounts. Then regard the sum of the present values of the several debts as a principal, and the sum of the discounts as the interest of that principal for a required time; to find which, divide this interest by the interest of the principal for one year, month, or day, according as the time is expressed; the quotient will be the time required for the sum of the present values of the several debts to amount to the sum of the several debts, which will be the true average time of payment.

Illustration of the rule.—Suppose A. owes B. \$4480, of which \$2240 will be due in 2 years, and the remainder in 10 years. What will be the

average time of payment, supposing the use of money to be worth 6 per cent. a year?

The present worth of \$2240 due in two years, is \$2000, and the discount is \$240.

The present worth of \$2240 due in ten years, is \$1400, and the discount is \$840.

The sum of the present values of the two debts, is \$3400, and the sum of the discounts is \$1080.

The interest of \$3400 for 1 year, is \$204, and $1080 \div 204 = 5.2941$ + years, or 5 yrs., 3 mo., 16 da. nearly, which is the *true average* time for the payment of the two debts. The average time when found by the usual methods is 6 years.

Proof.—The interest of \$3400 for 5 yrs., 3 mo., 16 da., is \$1080, and $3400 + 1080 = \$4480$, the sum of the two debts.

2. A. Gilbert purchased goods to the amount of \$4000, and agreed to pay \$1600 in four months, \$1200 in six months, and the remainder in eight months. What will be the average time for the payment of the whole amount at once, by the rule above?

ARTICLE XLV.

When a debt due at some future time, has received partial payments before the time the debt is due, to find how long after the debt is due, the remainder in equity may remain unpaid.

1. Suppose A. owes B. \$1200, due in six months; four months before it is due A. pays B. \$300, and two months before it is due A. pays B. \$300 more. How long after the expiration of six months may the remaining \$600 remain unpaid?

OPERATION.	EXPLANATION.
$\begin{array}{r} \$300 \times \overset{\text{mo.}}{4} = \overset{\text{mo.}}{1200} \end{array}$	$\left\{ \begin{array}{l} \text{A credit on \$300 for 4 months, is the same as credit} \\ \text{on \$1 for 1200 months.} \end{array} \right.$
$\begin{array}{r} \$300 \times \overset{\text{mo.}}{2} = \overset{\text{mo.}}{600} \\ 600 \times \overset{\text{mo.}}{3} = \overset{\text{mo.}}{1800} \\ \hline 3 \end{array}$	
$\begin{array}{r} 600 \times \overset{\text{mo.}}{3} = \overset{\text{mo.}}{1800} \\ \hline 3 \end{array}$	
$\left\{ \begin{array}{l} \text{A credit on \$300 for 2 months, is the same as a} \\ \text{credit on \$1 for 600 months. Therefore, \$1 must} \\ \text{have a credit of 1800 'months, and the balance} \\ \text{of the debt remaining due, which is \$600, must} \\ \text{have a credit of 1800 months } \div \$600 = 3 \end{array} \right.$	
months after the debt became due. Hence we derive the following	

months after the debt became due. Hence we derive the following

RULE.—Multiply each payment by the time it was paid before it became due, and divide the sum of the products by the balance of the debt remaining unpaid, the quotient will be the required time.

2. A person owes \$1800, due at the end of twelve months. At the end of six months he pays \$600; 3 months after that he pays \$600 more. How long after the expiration of the twelve months may the balance remain unpaid?

3. A. lends B. \$1500, which is to be paid at the end of twelve months. At the end of six months B. pays A. \$500; 3 months after that, \$300 more; and two months before the expiration of the time, \$200 more. How long after the expiration of the twelve months may the balance remain unpaid?

ARTICLE XLIV.

"An Account Current is a statement of the mercantile transactions between two persons, arranged in the form of Dr. and Cr., exhibiting the state of those transactions up to any given date."

The term Dr. is used to indicate that the person with whom the account is kept is debtor for the sums on the left; and the term Cr., to indicate that he is creditor for the sums on the right.

Accounts Current are usually made up at the end of every six or twelve months, and it is the practice to charge interest on all sums on the debtor side that fall due before making up the account; and to *allow* interest on all sums on the creditor side that fall due before making up the account.

1. An Account Current may be arranged and settled by finding the *average* time for the payment of the balance of the account, so that no loss of interest shall be sustained by either debtor or creditor.

2. An Account Current may be arranged and settled by computing the interest on the amount of each item from the time it becomes due to the time at which the amount is made up, and the difference between the amounts of interest on the debtor and creditor sides, or balance of interest, carried to the proper side of the account current.

Illustration of the first method.—Suppose A. owes B. \$20, due Sept. 15, and that B. owes A. \$30, due Sept. 25. If A. does not pay B. the

\$20 until Sept. 25, he will have had the use of it ten days. If B. pays A. \$20 Sept. 25, at what time should B. pay A. the balance, \$10, so that neither shall sustain any loss of interest?

The use or interest of \$20 ten days = the use or interest of \$10 twenty days; therefore, B. should have the use of the balance, \$10, twenty days after Sept. 25, and B. should pay A. the balance Oct. 15.

Suppose A. owes B. \$30, due Sept. 15, and B. owes A. \$20, due Sept. 25. If A. should not pay B. until Sept. 25, he will have had the use of \$30, due B. Sept. 15, ten days = to the use of \$10 the balance, thirty days; therefore, B. ought to have received the balance, \$10, thirty days previous to Sept. 25, or August 26.

From the above illustration we deduce the following rule for finding the time when the balance of an Account Current will *average due*.

RULE.—Find the date at which the total amount of the several items on each side of the account will average due. Then multiply the amount earliest due by the number of days between the average dates, and divide the product by the balance of the account; the quotient will be the number of days from the latest date when the balance of the account will average due; to be counted forward if the amount latest due is the larger, to be counted backward if the amount latest due is the smaller.

DR. W. WELLS IN ACCOUNT CURRENT WITH H. DYER, CR.							
1886	\$	DATE.		1886	\$	DATE.	
Jan. 6,	for mdse. on 6 mo.	240,	July 6	Jan. 20,	by mdse. on 6 mo.	140,	July 20
Feb. 10,	"	130,	Aug. 10	Feb. 15,	"	120,	Aug. 15
Mar. 15,	"	120,	Sept. 15	Mar. 25,	"	92,	Sept. 25
Apr. 20,	"	50,	Oct. 20	Apr. 30,	"	60,	Oct. 20
			\$540				\$412

When will the balance of the above account average due?

Method of Operation.

1886.	\$	da.	products.	1886.	\$	da.	products.
Due July 6,	240	×	0 =	Due July 20,	140	×	14 = 1960
" Aug. 10,	130	×	35 = 4550	" Aug. 15,	120	×	40 = 4800
" Sept. 15,	120	×	71 = 8520	" Sept. 25,	92	×	81 = 7452
" Oct. 20,	50	×	106 = 5300	" Oct. 26,	60	×	106 = 6360
	\$540		18370		\$412		20572

$18370 \div 540 = 34$ days, counting from July 6, gives Aug. 9, the date at which the Dr. side will average due.

$20572 \div 412 = 50$ days nearly, counting from July 6, gives Aug. 25, the date at which the Cr. side will average due.

540 — 412 = 128, the balance of the account.

From Aug. 9, to Aug. 25, is 16 days, the number between the dates; \$540, the amount first due, \times 16, the number of days between the dates, = 8640 \div \$128, the balance of the account, = 67 + days, which counted *backward* from the *later* date, gives June 19, 1856, the date at which the balance of the account will average due.

N. B. If a note be given for the balance of the above account dated June 19, 1856, it should be on interest from the date till paid.

We will now find when the balance of the above account will average due by interest.

Dr. W. WELLS, IN ACCOUNT CURRENT WITH H. DYER, Cr.

0 mo.	1856.	Jan. 6	For mdse. on 6 months..	\$	mo	da	Interest.	0 mo.	1856.	Jan. 20	By mdse. on 6 months..	\$	mo	da	Interest.
1 mo.	Feb. 10	"	"	120	6	5	\$ 7.400	1 mo.	Feb. 15	"	"	120	6	19	\$ 4.642
2 mo.	Mar. 15	"	"	120	7	9	4.745	2 mo.	Mar. 25	"	"	120	7	14	4.480
3 mo.	Apr. 20	"	"	50	8	14	5.060	3 mo.	Apr. 20	"	"	92	8	24	4.048
				50	9	19	2.408					60	9	19	2.890
				540			\$19.633					412			\$16.060

\$540 — \$412 = \$128, the balance of the account.

\$19.633 — \$16.060 — \$3.573, the balance of interest.

\$3.573 \div \$128 = .028 nearly, the interest of one dollar for the required average time, opposite which in Interest Table, is 5 mo. 18 da., which counted *forward* from Jan. 1, 1856, gives June 19, 1856, the date at which the balance of the account will average due. \$128 \times .005 = .640, and \$3.573 \div .640 = 5 mo. 18 da. nearly, which counting from Jan. 1, 1856, gives June 19, 1856, the date at which the balance of the account will average due.

Explanation.—In finding the time when each bill will become due, we write 0 opposite the first month in which a purchase is made; the first day of that month in which the earliest purchase is made, either on the Dr. or Cr. side, is the most convenient date from which to compute the time, both sides being computed from the same date, and opposite the following months we write 1, 2, 3, 4, 5, respectively, always writing the same figure opposite the same month on both sides of the account, which figure is the number of months; and the date of the bills is the number of days, less one, from January 1, until they were severally purchased, to which we add the time of credit on which the bills were severally purchased, which gives us the time from January 1, until they will be severally due.

Then we compute the interest on the amount of each bill on both sides of the account for the time thus found, and write it opposite the amount of the bill, and find the total amount of bills and interest on each side of the account. We next find the balance of the total amounts of bills; also, the balance of interest, and divide the balance of interest by the balance of the total amounts of bills, the quotient is the interest on one dollar for the required average time, opposite which, in the Interest Table, is 5 mo. 18 da., which counted *forward* from Jan. 1, 1856, gives June 19, 1856, the date at which the balance of the account will average due.

We have also divided the balance of interest by the interest on the balance of the account for 1 month; the quotient is the time in which the balance of the account will average due from Jan. 1, 1856, which is 5 mo. 18 days, the same as above.

N. B. When the interest of the smaller side of the account is larger than the interest of the greater side, subtract the smaller sum of interest from the greater, and divide as before, and count the time *backward* instead of *forward* from the date used.

DR. W. THOMPSON, IN ACCOUNT CURRENT AND INTEREST WITH M. GRANT, CR.

1856				1856			
Jan. 4	For mdse.	\$250 on 4 mo.	Due May 4	Jan. 10	By mdse.	\$500 on 4 mo.	Due May 10
Feb. 1	"	140 on 3 mo.	Due May 1	Jan. 20	"	200 on 3 mo.	Due Apr. 20
Feb. 15	"	450 on 2 mo.	Due Apr. 15	Feb. 15	"	350 on 4 mo.	Due June 15
Mar. 2	"	100 on 1 mo.	Due Apr. 2	Mar. 4	"	240 on 2 mo.	Due May 4
		\$940				\$1290	

At what time will the balance of the above account average due? To be averaged by the usual method, also by interest.

NOTE.—The averaged time will frequently contain a fraction of a day; when it is more than one half, add one to the number of days; when it does not exceed one half, it may be disregarded.

ARTICLE XLVII.

Instead of computing the interest on the amount of each item, it is more convenient to multiply the amount of each item by the number of days intervening between the time it becomes due and the time of making up the account, and to divide the balance of the products by 6, the quotient is the balance of interest in mills at the time of making up the account. The following account is an illustration.

Dr. W. MASON, SAVANNAH, IN ACCOUNT CURRENT AND INT. TO MAR. 1, WITH D. CLARK, MOBILE, Cr.

1855		1855		1855		1855		Products.		Days.		Products.	
Jan.	1	For balance of old account,...	\$57.80	59	3422	Jan.	3	By Bills Payable now due, ..	\$127.50	57	7239		
	8	Merchandise now due,...	95.63	52	4992		20	Cash	50.00	40	2000		
	15	Bills Payable, "	48.60	45	2205		16	Merchandise	73.80	13	962		
Feb.	6	Merchandise	105.10	23	2415	Feb.	24	Cash,	201.10	5	1005		
	17	18 bbls. Flour, @ \$9 cash,	162.00	12	1944		26	Merchandise	27.50	3	81		
	27	3 hhd.s.mol., @ 30c per gal.	56.70	2	114								
Mar.	1	Balance of interest,....	.63					By balance to be debited to new account,.....	\$479.90				
									46.56				
									\$526.46				

NOTE 1.—In operations like the above, if the sum of any item in the account contains cents not more than 50, they are usually disregarded, but if they exceed 50 the number of dollars is increased by 1.
 NOTE 2.—In the above account all charges for merchandise are considered as due at the time of purchase, or as cash. If the account is to be settled by note instead of carrying the balance to a new account, that note should be dated at the time the account is made up, and on interest from the date till paid.

[illegible]

Figure 9

Errors excepted, Dec. 81, 1855.

[illegible]

E. E. Paris, December 31, 1855.

H. MARTIN & CO.

N. B. This account is averaged by multiplying by the number of days and dividing by 3600; but only one hundredth of the products is put down, consequently the balance of products is divided by 60, which gives the interest.

AVERAGING ACCOUNTS CURRENT.

A. B. IN ACCOUNT CURRENT AND INTEREST, TO DECEMBER 10, 1854, WITH C. D.				Cr.
Dr.				
	1854	1854	1854	
	Date	Amount.	De.	Interest.
1854				
April 26	Merchandise at 6 months,			
May 4	"	\$112.50	45	\$6.61
May 26	"	90.00	36	6.60
May 28	"	225.00	12	4.84
May 30	"	92.00	10	*12.02
Aug. 8	"			
Aug. 8	"	\$315.00	60	\$3.15
Aug. 8	"	*150.00	60	*1.50
Aug. 20	"	*45.00	72	*1.54
Sept. 7	"	*104.00	87	*1.51
Sept. 7	"	*138.00	87	*2.00
Sept. 7	"	*207.00	87	*2.00
Sept. 22	"	*18.79	102	*1.82
Sept. 22	Balance of interest,			23.09
		\$1497.25		\$30.07
		\$637.70		
1854				
Dec. 10	Balance due,			
		\$637.70		

The amounts marked with a star, if paid on the 10th December, 1854, would be paid before they are due, consequently interest will have to be allowed on them, and it is therefore carried to the Cr. side of the account.

The amounts marked with a star, if paid on the 10th December, 1854, would be paid before they are due, consequently interest will have to be allowed on them, and it is therefore carried to the Cr. side of the account.

[illegible]

The balance of the debt is \$666.79, and the balance of interest is \$16.79 in favor of the Cr., that is, there has been paid \$16.79 more interest than was due up to the 22d March, consequently the balance of the debt, \$666.79 ought not to be paid until as many days after 22d March as is required for it to earn \$16.79 int. which is 151 days, counted forward from 22d March, gives 20th August, the time for the payment of the balance, and if paid 10th December, 1884, deduct 253 days' interest, \$666.79 — \$28.07 = \$638.72, due 10th December, 1884.

ARTICLE XLVII.

AVERAGING BOOK ACCOUNTS CONTAINING BOTH DEBITS
AND CREDITS.

Book Accounts containing both debits and credits are averaged in the same manner as *Accounts Current*.

Charges in Book Accounts are usually regarded as payable whenever demanded, and are to be considered as cash at the time of sale, in averaging the following accounts.

Da.			WILLIAM MANNING.			Cr.		
1856			1856					
June 1	For bal. of old acc.	\$57	June 18	By Cash,.....	\$61			
21	Merchandise, ..	84	July 3	Bills Receivable,	46			
July 1	Merchandise, ..	71	18	Merchandise, ..	80			
16	Merchandise, ..	105						
		\$317						\$187

When will the balance of the above account average due ?

Solution by the usual method.

	Int.		Int.
\$57 × 0		\$61 × 17 = 1037 ÷ 6 = .173	
84 × 20 = 1680 ÷ 6 = .280		46 × 32 = 1472 ÷ 6 = .245	
71 × 30 = 2130 ÷ 6 = .355		80 × 47 = 3760 ÷ 6 = .627	
105 × 45 = 4725 ÷ 6 = .787		\$187	6269
\$317	8535	\$1.422	\$1.045
8535 ÷ 317 = 27 days, nearly,		6269 ÷ 187 = 34 days, nearly,	
counting from June 1, gives June 28,		counting from June 1, gives July 5,	
the date when the Dr. side will		the date when the Cr. side will	
average due.		average due.	

From June 28 to July 5, is seven days, the difference between the dates.
 $\$317 - \$187 = 130$, the balance of the account.

$\$317$, the amount first due, $\times 7 = 2219 \div 130 = 17$ days, which, counting *backward* from July 5, gives June 18, the date at which the *balance* of the account will *average due*.

Solution by interest.

The amount of interest on the Dr. side is \$1.422. The amount of interest on the Cr. side is \$1.045. The balance of interest is $.377 \div 130$, the balance of the account = .0029, opposite which in Interest Table, is 17 days, counting *forward* from June 1, gives June 18, the date at which the *balance* of the above account will *average due*.

$\$130 \times .0001\frac{2}{3} = .02167$, the interest of \$130 for 1 day, and $.377 \div .02167 = 17$ days, which counted *forward* from June 1, gives June 18, the date at which the *balance* of the above account will *average due*.

Instead of computing the interest on each item of the account, as above, the balance of interest may be found by dividing the difference of the total amount of the products on the Dr. and Cr. sides of the account by 6, the quotient will be the *balance* of interest in mills. Thus: $8535 - 6269 = 2266 \div 6 = .377$ mills, or 37 cents 7 mills.

2 Dr.	JOSIAH STEDMAN,	Cr.
1856		1856
Jan. 10, For Merchandise,...	\$156	Jan. 20, By Cash, \$108
25, Note, 96		30, Cash, 88
Feb. 5, Merchandise, ... 210		Feb. 16, Merchandise, ... 180
25, Merchandise, ... 160		25, Merchandise, ... 150
Mar. 3, Merchandise, ... 89		
	\$711	\$526

The above account was settled by a note for the balance on 30 days. What was the date of the note, and what was the date of its maturity, including 3 days' grace?

3 Dr. ISAAC CAREY. Cr.

1855			1855		
July 10,	For Merchandise, ..	\$327	July 18,	By Cash,	\$300
25,	Merchandise, ..	198	Aug. 10,	Bills Receiv...	325
Aug. 5,	Merchandise, ..	259	Sept. 3,	Cash,	395
21,	Bills Payable, ..	186	12,	Cash,	210
28,	Merchandise, ..	200			
Sept. 10,	Merchandise, ..	150			
		\$1320			\$1230

Required the time when the balance of the above account will average due.

4 Dr. ROBERT RICHARDSON, Cr.

1855			Da.	Int.	1855			Da.	Int.
Oct. 12,	For mdse.	\$218			Nov. 3,	By Cash,	\$300		
18,	"	40			5,	"	56		
27,	"	156			18,	"	168		
31,	"	216			21,	"	144		
Nov. 10,	"	140							

Required the number of days each item is on interest, counting from Oct. 1, the interest of each item, the balance of interest, also the balance of the account on settlement, Dec. 1, 1855.

5. A. B. in Account Current with C. D., debits, 1855, July 3, \$5000; July 28, \$40; Aug. 16, 800; Commission and charges, 6 per cent., on \$18000. Credits, 1856, March 2, \$9000; May 15, \$9000.

What was the balance of the above account, rendered July 1, 1856?

ARTICLE XLVIII.

AVERAGE APPLIED TO THE STORAGE OF PROPERTY.

Formula 1.

Received and delivered on account
of S. B. & CO., sundry parcels of
flour, as follows:

	bbls.	da.	prod.
Jan. 22, Rec'd	125	× 9	= 1125
31, " "	1000		
		1125 × 1	= 1125
Feb. 1, Delv'd	545		
		680 × 14	= 8120
15, Delv'd	312		
		268 × 3	= 804
18, Rec'd	420		
		688 × 7	= 4816
25, Delv'd	258		
		430 × 3	= 1290
28, Delv'd	220	30)	17280
Bal. in Store,	210	bbls.	576

According to the above statements
there were received 1545 bbls. from
Jan. 22, to Feb 28, and during the
same time 1335 bbls. were delivered,
leaving in store 210 bbls.

Formula 2.

Number of bbls. received and de-
livered the same as in formula 1.

RECEIVED.

	bbls.	da.	products.
Jan. 22,	125	× 37	= 4625
31,	1000	× 28	= 28000
Feb. 18,	420	× 10	= 4200
	bbls. 1545		prod. 36825
			19545
		30)	17280
			lbs. 576

DELIVERED.

	bbls.	da.	products.
Feb. 1,	545	× 27	= 14715
15,	312	× 13	= 4056
25,	258	× 3	= 774
28,	220	× 0	= 000
	bbls. 1335		prod. 19545

In formula 1, we multiply the number of barrels by the num-
ber of days they are in store, and add the several products; the
amount is 17280, the number of barrels on which storage should
be charged for one day; then this divided by 30 gives 576, the
number on which to charge storage for one month.

In formula 2, we multiply the number of barrels received, and

the number of barrels delivered, each separately by the number of days from the date of reception, or delivery, to the time the average closes, Feb. 28, and subtract the smaller product from the greater; the difference is 17280, divided by 30, gives 576, the same as before.

ARTICLE XLIX.

EXCHANGE.

Exchange, in commerce, is a term which designates that class of mercantile transactions, by which the debts of individuals residing at a distance from their creditors, are cancelled without the transmission of money.

A Bill of Exchange is an order addressed to some person at a distance, directing him to pay a specified sum of money to the person in whose favor the bill is drawn, or to his order, either at sight, or after the termination of some specified time. The person who draws the bill is called the *drawer*; the person in whose favor it is drawn, the remitter or payee; the person on whom it is drawn, the *drawee*; the drawee is also called the *acceptor*, when he has accepted or engaged to pay the bill.

Bills of Exchange are bought and sold, and pass from one individual to another, like any other circulating medium. When the remitter disposes of a bill he writes his name on the back, and is termed the *endorser*. If he endorses in favor of any particular individual, he gives a *special endorsement*, and such *endorsers* must also endorse the bill if he negotiates it. But if the endorsement is blank, the bill may be passed at pleasure, from one person to another. Every endorser, as well as the acceptor, is held responsible for the payment of the bill, and may be sued for its recovery.

The intrinsic *Par of Exchange* is the value of the currency of one country, estimated in the currency of another, by comparing the quantity of gold and silver in their respective coins.

The *intrinsic* value of the English sovereign, which represents the pound sterling, is \$4.861, in our gold, taken as a standard.

The *exchange* value of the English pound is \$4.44 $\frac{1}{2}$, and all premiums are computed upon this standard.

The *commercial* value of a Bill of Exchange on London is its exchange value, plus the premium it will bring in the market.

Suppose bills on London sell at 9 per cent. premium; if we add to the *exchange* value of the pound sterling 9 per cent. the sum is the *commercial* value.

$$\begin{array}{rcl} \text{Exchange value of 1 } \pounds & = & \$4.44\frac{1}{2} \\ \text{Premium, 9 per cent.} & = & .40 \\ \hline \text{Commercial value} & = & \$4.84\frac{1}{2} \end{array}$$

"The course of exchange, or the fluctuation above or below par, depends generally on the amounts due between different countries. Thus, when the debts and credits between two countries are equal, the real exchange is at par. But if New York owes London more than London owes New York, there will be a greater demand for bills on London; and this demand causes the bills to be at a premium. The premium, however, can never exceed the cost of transporting specie; for if it did, all debts would be paid in money or merchandise, instead of bills of exchange."

"The relative value of the coins of two countries is regulated entirely by their purity; and so long as that is not changed, their relative value is not affected."

"The comparative rate of gold and silver is variable, and the mint value is differently estimated by different governments."

"In England, the relative value of the two metals is as 1 to 14.29, that is, 1 grain of British gold is worth 14.29 of silver; in France it is as 1 to 15.52; and in the United States, as 1 to 15.99."

"The operation of Bills of Exchange, may be explained by a single example."

"If A., of Boston, owes B., of Paris, and C., of Paris, owes D., of Boston, A. purchases, in the market, a *bill* upon Paris; that

is, he buys of D., an order on his debtor, C., to pay A., or his order, the amount desired. A. endorses the bill and sends it to B., who receives payment from C. Thus the two debts are cancelled by a single remittance; the inconvenience of exporting and reimporting coin is removed, and all danger of loss is obviated by sending three bills, called the First, Second, and Third, of Exchange, either of which being paid the others are void."

"An *Acceptance* is an engagement to pay the amount of the bill, and may be either *absolute* or *qualified*."

"An *absolute* acceptance binds the drawer when the bills become due, and in making it, the drawee usually writes 'Accepted,' and subscribes his name at the bottom or across the body of the bill. A *qualified* acceptance implies some condition, as the sale of merchandise, &c., and does not bind the acceptor until the condition is complied with. If a bill is made payable at a certain time after sight, the acceptance should be dated."

"A bill should be presented for payment during the regular hours of business, on the day it becomes due."

"When acceptance or payment has been refused, the holder should give immediate notice to all the parties whom he intends to hold responsible for the payment of the bill."

"This notice is usually accompanied with a *Protest*, which is an instrument prepared by a Public Notary, stating that acceptance or payment has been demanded and refused, and that the holder of the bill intends to recover any damages which he may sustain in consequence."

ARTICLE L.

"*Bills of Exchange* and *Promissory Notes*, by their quality of negotiability, are the means by which debts and credits are transferred from one person to another with safety, dispatch, and economy."

"Every note should contain a promise to pay the amount

specified therein, either on demand, or at the expiration of some period of time mentioned. The *amount* to be paid, and the time of its payment should be distinctly stated."

"Promissory notes are of two kinds;—*negotiable*, and *not negotiable*. A *negotiable* note expresses on its face that it is payable, not only to the person named in it, but to any other person who shall acquire a legal interest in it. If it be made payable to John Stiles, or *order*, it is then negotiable by *endorsement*; if to John Stiles, or *bearer*, it is then negotiable by *delivery*."

"A note *not negotiable*, expresses on its face that it is payable to the particular person named in it, as to John Stiles. Such a note is payable only to the person named."

"The note must be for the payment of *money*. Therefore a written promise to pay in goods or labor, is not a negotiable promissory note, although put in the form of a note, and payable to *order*, or *bearer*."

"It is not necessary that a note should specify any place of payment, but when it is the intent of the parties that it shall be paid at a particular place, the place must be specified in the body of the note."

"Nor is it essential that a note should be attested. An attestation, however, in Massachusetts, takes a note out of the statute of limitations, as to the payee, his executor, or administrator."

"A promissory note may be made by one person; or by two or more persons. When made by two or more persons, it may be joint, or joint and several. When a note is joint, all the promisors must be jointly sued; if joint and several, either promisor may be sued alone."

"A note may be transferred by *delivery* or by *endorsement*."

"As to *transfer by delivery*. The rule is, that no person whose name is not on the note, as a party thereto, is liable on the note."

"Therefore, a note payable to bearer, or endorsed in blank, is transferred by the holder, *by delivery only*; the party transferring it is not liable upon it."

"*As to transfer by endorsement.* When a note is payable to a person, or his order, it is properly transferable only by endorsement, as nothing else will give the holder a legal title, so that he can, at law, hold the parties to the note directly liable to him."

"No particular form of words is required to make an endorsement legal; generally it is enough if the signature of the endorser is on the note without any words at all; and this is the usual mode of endorsing notes."

"A note transferable by delivery only, may be endorsed, and then the endorser incurs the same obligations and liabilities as if the note had been originally made transferable by endorsement only."

"A *blank* endorsement is merely the name of the endorsee written on the note. An endorsement is said to be *general* when it is in blank, or payable to the endorsee, or *order*."

"Due presentment for payment requires that the note should be presented *as soon as it becomes due*. If the holder of the note does not present it to the promisor *on the day* it becomes due, the endorsers are discharged."

"Where a note is made payable on demand, the time at which payment must be demanded, depends on the circumstances of the case, the rule being that payment must be demanded in *reasonable time*; and in Massachusetts, by statute, the endorser is excused, if demand for payment on the maker is not made within sixty days from the date of the note."

"If a note is payable generally, that is, without any place being designated, it may be presented at the maker's counting-house, or dwelling-house; and where a note is made payable at a particular place, the demand must be made at the place fixed, otherwise the endorser is discharged."

"Where a note is payable by a partnership, presentment to either of the partners is sufficient. Where the promisors are only joint contractors, and not partners, demand must be made on each."

"The demand must be made *with* the note; and if any particular bank or place is fixed for payment, the note must be there, in order to make the demand valid."

"On the failure of the maker to pay, the holder must give due notice of it to each party liable to him, and if he fails to do so to any party, such party is discharged."

"When the endorser lives in the same place with the holder, notice may be given on the day when the demand was made, or the day after, but not later."

"When the endorser and holder live in different towns, the notice may be by mail, by special messenger, or by private hand. And the notice by mail, on the day or day after, is good, but not later."

"Where there are numerous endorsers, each is entitled to notice, and each is to give notice to all parties prior to himself; and each endorser has *the next day after receiving notice*, in which to give notice to any prior party whom he seeks to hold liable to himself."

ARTICLE LI.

DOMESTIC BILLS OF EXCHANGE.

"Bills of Exchange are drafts or checks drawn by one person upon another, by whom they are payable. The persons sustaining the relation of drawer and payer of any domestic bill, are usually residents of different parts of the same country."

"Bills of Domestic Exchange are seldom bought or sold for the value specified upon their face, but are subject to a discount, or command a premium, according to the course of exchange." The following is the usual form.

\$550.00

NEW YORK, JAN. 1, 1856.

Sixty days from date please pay to the order of Henry Hoyt, five hundred and fifty dollars, value received, and charge the same to the account of

Your obedient servant,

SAMUEL NORRIS.

To Messrs. Gregg, Belknap & Co. }
New Orleans. }

\$1275.00

PHILADELPHIA, AUG. 15, 1855.

Thirty days from date, pay to James N. Lewis, or order, twelve hundred and seventy-five dollars, value received, and charge the same to my account.

WILLIAM YOUNG.

To Messrs. Markham & Jones, }
Cincinnati, Ohio. }

The premium or discounts on drafts may be owing either to a difference in the value of the circulating medium, or to fluctuations in the demand.

\$240.00

BOSTON, MARCH 1, 1856.

Sixty days after date, please pay to the order of Jones & Sanford, two hundred and forty dollars, value received, and charge to my account.

WILLIAM NEWMAN.

To Messrs. Seaman & Filmore, }
New York City. }

The value of the above is required at 2 per cent. discount.

\$500.00

NEW ORLEANS, FEB. 20, 1856.

At sight, please to pay Charles Simpson, or order, five hundred dollars, value received, and charge the same to my account.

SAMUEL SLOWMAN.

To Messrs. Markham & Jones, }
Merchants, Cincinnati, Ohio }

What is the value of the above at a premium of 2 per cent. ?

ARTICLE LII.

FOREIGN EXCHANGE.

Bills of *Foreign Exchange* are those, the parties to which are residents in different countries. These bills originate in one country, but are payable in another. A change of currency is, therefore, a necessary part of *Foreign Exchange*.

The exchange value of the pound sterling of Great Britain, which is represented by the gold sovereign, was \$4.44 $\frac{1}{2}$, previous to the change in our standard. The greater adulteration of the metal composing our coin, increases the relative value of the pound sterling, so that it is equal to from \$4.84 to \$4.861. The original exchange value of the pound sterling is retained, and the *commercial* value is found by increasing the exchange value by 9 per cent. of itself, as shown in Art. 48.

As 4s. 6d. sterling is equal to \$1.00, and 4s. 6d. equals $\frac{1}{4}$ of a pound sterling, therefore, if any number of pounds sterling be multiplied by $\frac{1}{4}$, the product will be the *exchange* value in Federal money.

The following formula expresses the *exchange value*, and the *commercial value* of £360 sterling.

$£360 \times \frac{1}{4} = \$1600 =$ the *exchange value*, and $\$1600 \times .09 = \$144 + 1600 = \$1744$, the *commercial value* at 9 per cent. premium.

1. What is the commercial value of a Bill of Exchange on London, for £720 15s. 6d., at 9 $\frac{1}{2}$ per cent. premium?

$£720 \text{ 15s. 6d.} = £720.775 \times \frac{1}{4} = \$3203.444\frac{1}{2} \times .095 = \$304.327222\frac{1}{2} + \$3203.444444\frac{1}{2} = \$3507.771666\frac{1}{2}$, the *commercial value* required.

Form of a Foreign Bill of Exchange.

Exchange for £1000.

BOSTON, MARCH 1, 1856.

Sixty days after sight of this, my first Bill of Exchange, (second and third of the same date and tenor unpaid,) pay to George Lewis, or order, one thousand pounds sterling, value received, with or without further advice.

ISAAC WILSON.

Messrs. Samuel Johns & Co. }
Merchants, Liverpool. }

2. A merchant in New York wishes to remit to a house in London £1080 sterling, exchange being at a premium of 9 $\frac{1}{4}$ per cent.; what sum of Federal money will be necessary to purchase a Bill of Exchange for that amount?

In France, accounts are kept in *francs and centimes*; 1 franc 100 centimes. The value of 1 franc is 18.6 cents, on which

value the rate of exchange is computed. The rate of exchange is sometimes computed on the exchange value of a dollar, in francs and centimes.

3. What must a merchant of Boston pay for a Bill on Paris for 5000 francs, at a premium of $1\frac{1}{2}$ per cent. ?

$.186 \times 5.000 = \$930.000 \times .015 = \$13.95 + \$930 = \943.95 , the answer.

4. What must a merchant of New York pay for a Bill on Havre for 7675 francs, exchange being at the rate of 5 francs 40 centimes to the dollar?

ARTICLE LIII.

ARBITRATION OF EXCHANGE.

In making remittances to foreign countries, it is not always most advantageous to remit by the direct course.

Suppose a merchant in Boston wishes to pay a debt in Liverpool, and drafts on New York are below their par value, but at the same time command a premium in Paris, and Paris funds are at par in Liverpool, to remit through a banking house in Paris, will, evidently, be more for the interest of the merchant, than to remit directly to Liverpool. The determination of the value of such remittances is called *Arbitration of Exchange*, and is best ascertained by what is called the *Chain Rule*.

ARTICLE LIV.

When the exchange is made through a single intervening currency, it is called Simple Arbitration ; which is illustrated in Example 1.

The proper statement of the question, or arranging the terms correctly is the *important point* in the *Chain Rule*, and requires careful attention.

1. "Suppose a merchant in Boston wishes to pay a bill in London, of £780, and prefers to remit through Paris; what number of dollars must he pay to purchase a Bill of Exchange for £780, allowing 13 pounds sterling to equal 320 francs, and 16 francs to equal 3 dollars?"

Statement. — $\$X = £780 \ 60 \times 20 \times 3 = \3600 , the number
 $£13 = \text{Fr} 320 \ 20$ [required.
 $\text{Fr} 16 = \$3$

The number of dollars required being unknown, is represented by X , and is written at the top of the left column; and opposite to X , at the top of the right column, is written the correspondent term, or number of its equivalent, which is £780; then the term or number of the same kind or name as the number at the top of the right column, is written in the left column, under X , and opposite, in the right column, is written its equivalent. The remaining terms or numbers, are written in a similar manner; the last term or number in the right column, is always of the same kind as the required term.

Then the common factors in both terms are cancelled, and the continued product of those factors remaining in the right column are divided by the product of those remaining on the left; the quotient is the number required.

NOTE. It will frequently happen that all the common factors in both columns, except one in the right column, may be cancelled.

ARTICLE LV.

When the remittance passes through two or more intervening currencies, it is called Compound Arbitration.

2. "Suppose a merchant in New York wishes to transmit to Leghorn, funds sufficient to cancel a claim of 9600 livres, but prefers to transmit through Paris and Liverpool. How many dollars are required, allowing \$3 to equal 16 francs, 320 francs to equal £13, and £4 to equal 121 livres?"

Statement. — $X = \text{Li} 9600 \times 600 \times 4 \times 320 \times 3 \times 2304000 \div$
 $\text{Li} 121 = £ \ 4$ { $121 \times 13 = \$1464.71 +$, the
 $£ \ 13 = \text{Fr} \ 320$ { number required.
 $\text{Fr} \ 16 = \$ \ 3$

3. "A merchant wishes to remit \$4888.40, from New York to London, and the exchange premium is 10 per cent. He finds that he can remit to Paris at 5 francs 15 centimes to the dollar, and to Hamburg at 35 cents per marc banco. The exchange between Paris and London is 25 francs 80 centimes for £1 sterling, and between Hamburg and London 13½ marcs banco for £1 sterling. Which is the most advantageous course of remittance?"

1st. *Statement.* — £1 = \$4.444 + .4444 = \$4.8884, and \$4888.40 ÷ \$4.8884 = £1000, value of the direct remittance to London.

2d. *Statement.* — $X = \$4888.40 \times 1.03 \div 5.16 = £975 \text{ 15s. } 8\frac{1}{2}\text{d.}$
 $\$1 = \text{Fr } 5.16$ { value of the remittance through
 $5.16 \text{ Fr. } 80 = £ 1$ { Paris to London.

3d. *Statement.* — $X = \$4888.40 \div 13.75 \times .35 = £1015 \text{ 15s. } 5\frac{1}{2}\text{d.}$
 $\$35 = \text{m. b. } 1$ { value of the remittance through
 $\text{m. b. } 13.75 = £ 1$ { Hamburg to London.

These results show that the most advantageous course is through Hamburg; the next most advantageous course is the direct one; and the least advantageous, is through Paris.

4. A merchant in Boston wishes to remit to London \$981, so as to receive the largest possible returns for the same. If he remits directly to London, the sterling currency will command a premium of 9 per cent.; if through Paris, it must be at the rate of 5 francs 20 centimes to the dollar, and 25 francs 80 centimes to the pound; but if through Hamburg, at the rate of 35 cents per marc banco, and 55 marc bancos per £4. Which is the most desirable course of remittance?

1st. *Statement.* — $X = \$981 \times 1.09 \times 5 = 405 \div 2 = £202$
 $2 \text{ } \$40 = £ 9$ [10s., value of the direct course.
 $£100 = £100 \text{ } 5$

2d. *Statement.* — $X = \$981 \times 5.20 = 5101.20 \div 25.80 = £197$
 $\$1 = \text{Fr } 5.20$ { 14s. 5d., value of the indi-
 $\text{Fr } 25.80 = £ 1$ { rect course, through Paris.

3d. *Statement.* — $X = \$981 \times 4 = 3924 \div .35 \times 55 = £203$
 $\$35 = \text{m. b. } 1$ { 16s. 10½d., value if remitted through
 $\text{m. b. } 55 = £ 4$ { Hamburg, and is the most desirable
 { course of remittance.

5. A merchant in New York wishes to cancel a debt of 3361 milrees, in Lisbon. Which of the following courses is preferable, the rates being as follows, viz: the direct course, 100 milrees = \$112; through Paris and

London, 1 milree = 6 francs, 25 francs = £1, and £1 = \$4.84; and through Madrid and Paris, 100 milrees = 106 Spanish dollars, 3 Spanish dollars = 17 francs, and 5 20 francs = \$1?

6. "A merchant in Hamburg wishing to remit to New York 1428 marc bancos, desires to know whether it is best to make the remittance direct through Paris and Madrid, or through Paris and Lisbon. He finds on inquiry that the exchange on Paris is at the rate of 37 marc bancos to 70 francs, and between Paris and Madrid at the rate of 210 francs to 37 Spanish dollars, and the Spanish dollar is worth \$1.05. Also, between Paris and Lisbon at the rate of 36 milrees to 224 francs, the milree being worth \$1.12 in the New York market. What is the comparative advantage of each course?"

7. "A merchant in Liverpool draws a Bill of £780 15s. on B., of Madrid, and remits the same to C., of Paris, who in turn remits to D., of Amsterdam, and D. remits to B., of Madrid. How many Spanish dollars will pay the bill if 1 Spanish dollar exchanges for 2 florins 15 stivers; 11 florins for 26 francs, and 25 francs for £1?"

8. A merchant in New York purchases a Bill on London for £650 10s., and pays a brokerage of $\frac{1}{4}$ per cent., the premium being 9 per cent. What did the Bill cost him? and what, supposing he remits the Bill to Paris, will he receive for the same, the exchange being at the rate of 29 francs per £1 sterling, and $5\frac{1}{2}$ francs to the Federal dollar?"

1st. *Statement.*— $X = £650.5 \times 109 \times .0025 \times 40 = 28432-$
 $£100 = £109$ { $70.45 \div 100 \times 9 = \$3159.189,$
 $£ 1 = £ 1.0025$ { the cost.
 $£ 9 = \$ 40$

2d. *Statement.*— $X = £650.5 \times 29 \times 1.0025 = 18911.66125 \div$
 $£1 = \text{Fr } 29$ { $5.5 = \$3438.484,$ the number
 $\text{Fr } 5.5 = \$ 1$ { of dollars he will receive.
 $\$1 = \$ 1.0025$

9. A New York merchant wishing to pay a bill in Paris, of 16500 francs, purchases a Bill on London at a premium of 9 per cent., paying 1 per cent. brokerage. Required the cost of the Bill, allowing 26 francs to the pound sterling?

Statement.— $X = \text{Fr } 16500 \times 109 \times 1.01 \times 40 = 72659400.00$
 $\text{Fr } 26 = £ 1$ { $\div 26 \times 100 \times 9 = \$3105.102,$
 $£ 100 = £ 109$ { the cost of the Bill.
 $£ 1 = £ 1.01$
 $£ 9 = \$ 40$

10. A merchant in Boston wishes to remit to Hamburg funds sufficient to cancel a claim of 3850 marc bancos, but prefers to remit through London; and for that purpose purchases a Bill on London at a premium of 8 per cent. Allowing 14 marc bancos to the pound sterling, what did the Bill cost, brokerage $\frac{1}{2}$ per cent. ?

ARTICLE LVI.

AMERICAN DUTIES.

Duties are taxes levied by the Congress of the United States, upon most articles of merchandise imported from foreign countries. They are of two kinds, *ad valorem* and *specific*.

An *ad valorem* duty is a specified per cent. on the actual cost of the goods in the country from which they were imported.

A *specific duty* is a specified sum on a yard, pound, gallon, &c.

Duties are levied only on the articles of merchandise, and not on the boxes, casks, bags, &c., which contain them; hence, certain deductions are to be made from their gross weight or measure, called *allowances*. These allowances are *draft*, *tare*, *leakage*, and *breakage*.

Gross weight is the whole weight of the goods, including the box, cask, chest, &c., which contains them.

Net weight is the weight of the goods after all allowances have been deducted.

Draft is an allowance made for waste, which is to be deducted from the gross weight, and is as follows:

On 112 lbs.,	.....	1 lb.
Above 112 lbs. and not exceeding 224 lbs.,	.....	2 lbs.
“ 224 lbs. “ “ 336 lbs.,	.....	3 lbs.
“ 336 lbs. “ “ 1120 lbs.,	.....	4 lbs.
“ 1120 lbs. “ “ 2016 lbs.,	.....	7 lbs.
“ 2016 lbs.,	.....	9 lbs.

Tare is an allowance made for the actual or supposed weight of the box, cask, or chest, which contains the goods, or a specified percentage of the gross weight, and is to be deducted after the draft has been deducted.

Breakage is an allowance of 10 per cent. on porter, ale and beer; and of 5 per cent. on all other liquors imported in bottles. A dozen bottles of the usual size, are estimated to contain two and three quarters gallons.

Leakage is an allowance of 2 per cent., which is to be deducted from the gauge or measure of all liquids imported in casks.

In deducting allowances, a fraction is disregarded unless it exceeds one half, when it is considered a unit.

Tariff of Duties, payable on the principal articles under the present Revenue Laws.

Ashes 20 ¢ ct. Anchors 30 ¢ ct. Barilla 10 ¢ ct. Beeswax 20 ¢ ct. Bristles 5 ¢ ct. Candles 20 ¢ ct. Coal 30 ¢ ct. Cocoa 10 ¢ ct. Coffee, imported direct from the place of growth in American vessels, or foreign vessels entitled by reciprocal treaties to exception from discriminating duties, also of the growth of the Netherland possessions, imported from the Netherlands in the same manner, free. Copper, sheathing, 48 by 14 in., weighing 14 @ 34 oz. ¢ sq. ft., and ore, free; rods, bolts, and spikes, 30 ¢ ct., pigs 5 ¢ ct. Cordage 25 ¢ ct. Corks 30 ¢ ct. Corkwood 15 ¢ ct. Cotton free. Crash 20 ¢ ct. Diaper, linen, 20 ¢ ct., cotton 25 ¢ ct. Drugs, camphor, refined, 40 ¢ ct., do. crude, 25 ¢ ct.; otto rose 30 ¢ ct.; alum, arrowroot, roll brimstone, castor oil, copperas, cream-tartar, liquorice, opium, quicksilver, quinine, sarsaparilla, and tapioca, 20 ¢ ct.; crude brimstone 15 ¢ ct.; annatto, and gums arabic, senegal, and tragacanth, 10 ¢ ct.; madder and shellac 5 ¢ ct. Duck 20 ¢ ct. Dyestuffs, cochineal and indigo, 10 ¢ ct.; dyewoods 5 ¢ ct. Feathers 25 ¢ ct. Fish 20 ¢ ct. Flax 15 ¢ ct. Fruit, raisins, almonds, currants, dates, figs, and prunes, 40 ¢ ct.; grapes, olives, and nuts, except almonds, 30 ¢ ct.; lemons and oranges 20 ¢ ct. Furs, dressed on the skin, 20 ¢ ct.; undressed on the skin, and hatters, not on the skin, 10 ¢ ct. Glue 20 ¢ ct. Grain 20 ¢ ct. Gunny bags 20 ¢ ct. Gunny cloth 20 ¢ ct. Gunpowder 20 ¢ ct. Hemp 30 ¢ ct. Hides 5 ¢ ct. Skins 20 ¢ ct. Honey 30 ¢ ct. Horsehair 10 ¢ ct. Horns 5 ¢ ct. India rubber, manufactured, 30 ¢ ct., unmanufactured 10 ¢ ct. Iron 30 ¢ ct. Ivory 5 ¢ ct. Lignumvitæ 30 ¢ ct. Mahogany 20 ¢ ct. Marble 20 ¢ ct. Molasses 30 ¢ ct. Mustard 20 ¢ ct. Oakum free. Oil, in bottles or flasks, 30 ¢ ct.; fish (including sperm, &c.) of foreign fisheries, and linseed, 20 ¢ ct.; fish, of American fisheries, free; palm 10 ¢ ct. Paints, Spanish brown, terra umbra, and all ochres, 30 ¢ ct.; and all other 20 ¢ ct.; chalk 5 ¢ ct. Porter 30 ¢ ct. Potatoes 30 ¢ ct. Quills 20 ¢ ct. Rags 5 ¢ ct. Rattans 20 ¢ ct. Salt 20 ¢ ct. Saltpetre, refined, 10 ¢ ct.; crude 5 ¢ ct. Seed, mustard and flaxseed, 20 ¢ ct.; linseed 10 ¢ ct.; others free. Sheetings 20 ¢ ct. Soap 30 ¢ ct. Spices, cassia, mace, nutmegs, cloves, pimento and race ginger, 40 ¢ ct. cinnamon, pepper, and ground ginger, 30 ¢ ct. Spirits 100 ¢ ct. Steel, in bars, cast, shear, and German, 15 ¢ ct.; all other 20 ¢ ct. Sugar 30 ¢ ct. Sumac 5 ¢ ct. Tallow 10 ¢ ct. Tea, imported direct from the place of growth in American vessels, or foreign vessels entitled by reciprocal treaties to exemption from discriminating duties, free. Teazles 20 ¢ ct. Tin, plates, 15 ¢ ct.; bars, pigs, and blocks, 5 ¢ ct. Tobacco, manufactured, 40 ¢ ct.; unmanufactured 30 ¢ ct. Turtle Shell 5 ¢ ct. Twine 30 ¢ ct. Whalebone, of foreign fisheries, 20 ¢ ct. American, duty free. Wine 40 ¢ ct. Wool 30 ¢ ct. Zinc, sheets, 15 ¢ ct.: pigs and slabs 5 ¢ ct.

1. A merchant in Boston imported from Liverpool the following articles of merchandise, viz ; 780 yards of broadcloth, cost 12s. 6d. sterling per yard, duty 30 per cent. ; 1260 square yards of English oil cloth, cost 4s. 6d. sterling per square yard, duty 30 per cent. ; 1580 yards of Brussels carpeting, cost 4s. sterling per yard, duty 30 per cent. ; 875 yards drugget, cost 2s. 6d. per yard, duty 30 per cent. ; and 362 pieces silk handkerchiefs, cost £2 4s. per piece, duty 25 per cent. Required the amount of duty in Federal money, allowing \$4 84 to equal £1 sterling ? Ans. \$2700,78.

2. A. B. of New York imported from Liverpool 350 gross penknives at £8 sterling per gross, duty 30 per cent. ; 720 sets of knives and forks, at 6s. sterling per set, duty 30 per cent. ; 475 cases of razors, at 4s. sterling per case, duty 30 per cent. ; 256 sets carvers and forks, at 2s. 6d. sterling per set, duty 30 per cent. ; 10 brass-mounted telescopes at £6 10s. each, duty 30 per cent. ; and 12 doz. keyed flutes, at £2 5s. each, duty 20 per cent. What amount of duty was he required to pay at the Custom House ?

3. What amount of duty is payable at the Custom House in Boston on the following articles, imported from Havre, viz : 364 cut glass preserve dishes, purchased at 3 francs each, duty 40 per cent. ; 530 doz. cut glass tumblers, at 31 francs per doz., duty 40 per cent. ; 84 hour-glasses, at 3 francs each, duty 30 per cent. ; 240 doz. plain glass tumblers, at 3 francs per doz., duty 30 per cent. ; 325 gross watch crystals, at 36 francs per gross, duty 30 per cent. ; and 640 doz. apothecaries' vials, at 1 franc per doz., duty 30 per cent. ?

4. Imported the following wines from Havre, viz : 6 casks of sherry, each 28 decalitre, at 5.25 francs per decalitre, duty 40 per cent. ; 22 casks port, each 30 decalitre, at 6.15 francs per decalitre, duty 40 per cent. ; 16 casks claret, each 25 decalitre, at 5.50 francs per decalitre, duty 40 per cent. ; 86 baskets champagne, at 65 francs per basket, duty 40 per cent. ; and 33 casks Madeira wine, each 42 decalitre, at 5 francs per decalitre, duty 40 per cent. Allowing on all but the champagne, a deduction of 2 per cent. for leakage, and 5 per cent. on the champagne for breakage, what was the amount of duty on the whole ?

5. A. and B. of Boston, import from Havana 86 hogsheads of molasses, each 63 gallons, at 21 cents a gallon, duty 30 per cent. ; 560 boxes cigars, at \$8 per box, duty 40 per cent. ; 875 boxes preserves and jellies, at 50 cents per box, duty 30 per cent. ; 546 boxes of oranges, at \$1.25 per box, duty 20 per cent. ; 796 boxes ground ginger, at 15 cents per box, duty 30 per cent. ; 560 boxes lemons, at \$1.50 per box, duty 20 per cent. ; and 75 boxes brown sugar, each 450 pounds, at 5 cents per pound, duty 30 per cent. The total amount of duty is required.

The following table of the rates at which foreign money or currency is taken at the United States Custom Houses, also the Exchange Tables, were prepared by R. C. Webster, Esq., Impost Clerk in the Boston Custom House, and are believed to be perfectly accurate.

The Rates at which Foreign Money or Currency is taken at the United States Custom Houses.

N. B. Those marked * are rates by usage when a Consular's Certificate of the real value or rate of Exchange is not attached to the invoice.

Crown of Tuscany, *.....	\$1.05	Livre of Geneva, *.....	21
Current Marc, *.....	.28	Livre of Catalonia, *.....	.53½
Dollar of Leghorn, *.....	.90	Livre of Leghorn, .....	.16
Dollar Specie of Denmark,....	1.05	Livre of Neufchatel, .....	.26½
Dollar Specie of Sweden and		Livre Tournois of France,....	.18½
Norway,	1.06	Mill Rea of Portugal,	1.12
Dollar (or Thaler) of Prussia		Mill Rea of Azores, .....	.38½
and the Northern States of		Marc Banco of Hamburg, .....	.35
Germany, .....	.69	Ounce of Sicily,	2.40
Dollar Rix of Bremen, .....	.78½	Pound Sterling of Gt. Britain, .	4.84
Ducat of Naples, .....	.80	Pound Sterling of Jamaica,....	4.84
Franc of France and Belgium, .	.18 ⁶ / ₁₀	Pound of British Provinces,	
Florin of Netherlands, .....	.40	of Nova Scotia, New Bruns-	
Florin of Southern States of		wick, New Foundland, and	
Germany, .....	.40	Canada,	4.00
Florin of Austria, .....	.48½	Pagoda of Madras,	1.84
Florin of Prussia, *.....	.22½	Piaster, Turkish, *.....	.05
Florin of Basle, *.....	.41	Real Vellon of Spain, .....	.05
Guilder of Netherlands, .....	.40	Real Plate of Spain, .....	.10
Lira of the Lombardo Venetian		Rupee, Company, .....	.44½
Kingdom, .....	.16	Rupee, Java, .....	.44
Lira of Tuscany, .....	.16	Rupee, Sicca, .....	.50
Lira of Sardinia, .....	.18 ⁶ / ₁₀	Rouble, Silver, of Russia, ....	.75
Livre of Genoa, .....	.18 ⁶ / ₁₀	Scuda of Malta, *.....	.40
Livre, Swiss, *.....	.27	Tale of China,	1.48

POUNDS STERLING.

£	£100 added.	£200 added.	£	£100 added.	£200 added.
1 = \$4.84	\$488.84	\$972.84	41 = \$198.44	\$682.44	\$1166.44
2 = 9.68	493.68	977.68	42 = 203.28	687.28	1171.28
3 = 14.52	498.52	982.52	43 = 208.12	692.12	1176.12
4 = 19.36	503.36	987.36	44 = 212.96	696.96	1180.96
5 = 24.20	508.20	992.20	45 = 217.80	701.80	1185.80
6 = 29.04	513.04	997.04	46 = 222.64	706.64	1190.64
7 = 33.88	517.88	1001.88	47 = 227.48	711.48	1195.48
8 = 38.72	522.72	1006.72	48 = 232.32	716.32	1200.32
9 = 43.56	527.56	1011.56	49 = 237.16	721.16	1205.16
10 = 48.40	532.40	1016.40	50 = 242.00	726.00	1210.00
11 = 53.24	537.24	1021.24	51 = 246.84	730.84	1214.84
12 = 58.08	542.08	1026.08	52 = 251.68	735.68	1219.68
13 = 62.92	546.92	1030.92	53 = 256.52	740.52	1224.52
14 = 67.76	551.76	1035.76	54 = 261.36	745.36	1229.36
15 = 72.60	556.60	1040.60	55 = 266.20	750.20	1234.20
16 = 77.44	561.44	1045.44	56 = 271.04	755.04	1239.04
17 = 82.28	566.28	1050.28	57 = 275.88	759.88	1243.88
18 = 87.12	571.12	1055.12	58 = 280.72	764.72	1248.72
19 = 91.96	575.96	1059.96	59 = 285.56	769.56	1253.56
20 = 96.80	580.80	1064.80	60 = 290.40	774.40	1258.40
21 = 101.64	585.64	1069.64	61 = 295.24	779.24	1263.24
22 = 106.48	590.48	1074.48	62 = 300.08	784.08	1268.08
23 = 111.32	595.32	1079.32	63 = 304.92	788.92	1272.92
24 = 116.16	600.16	1084.16	64 = 309.76	793.76	1277.76
25 = 121.00	605.00	1089.00	65 = 314.60	798.60	1282.60
26 = 125.84	609.84	1093.84	66 = 319.44	803.44	1287.44
27 = 130.68	614.68	1098.68	67 = 324.28	808.28	1292.28
28 = 135.52	619.52	1103.52	68 = 329.12	813.12	1297.12
29 = 140.36	624.36	1108.36	69 = 333.96	817.96	1301.96
30 = 145.20	629.20	1113.20	70 = 338.80	822.80	1306.80
31 = 150.04	634.04	1118.04	71 = 343.64	827.64	1311.64
32 = 154.88	638.88	1122.88	72 = 348.48	832.48	1316.48
33 = 159.72	643.72	1127.72	73 = 353.32	837.32	1321.32
34 = 164.56	648.56	1132.56	74 = 358.16	842.16	1326.16
35 = 169.40	653.40	1137.40	75 = 363.00	847.00	1331.00
36 = 174.24	658.24	1142.24	76 = 367.84	851.84	1335.84
37 = 179.08	663.08	1147.08	77 = 372.68	856.68	1340.68
38 = 183.92	667.92	1151.92	78 = 377.52	861.52	1345.52
39 = 188.76	672.76	1156.76	79 = 382.36	866.36	1350.36
40 = 193.60	677.60	1161.60	80 = 387.20	871.20	1355.20

POUNDS STERLING—(Continued.)

£	£100 added.	£200 added.		SHILLINGS.
81 = \$392.04	\$876.04	\$1360.04	£200 = \$968	s1 = \$.24 d1 = .02
82 = 396.88	880.88	1364.88	300 = 1,452	2 = .48 2 = .04
83 = 401.72	885.72	1369.72	400 = 1,936	3 = .73 3 = .06
84 = 406.56	890.56	1374.56	500 = 2,420	4 = .97 4 = .08
85 = 411.40	895.40	1379.40	600 = 2,904	5 = 1.21 5 = .10
86 = 416.24	900.24	1384.24	700 = 3,388	6 = 1.45 6 = .12
87 = 421.08	905.08	1389.08	800 = 3,872	7 = 1.69 7 = .14
88 = 425.92	909.92	1393.92	900 = 4,356	8 = 1.94 8 = .16
89 = 430.76	914.76	1398.76	1,000 = 4,840	9 = 2.18 9 = .18
90 = 435.60	919.60	1403.60	1,100 = 5,324	10 = 2.42 10 = .20
91 = 440.44	924.44	1408.44	1,200 = 5,808	11 = 2.66 11 = .22
92 = 445.28	929.28	1413.28	1,300 = 6,292	12 = 2.90 12 = .24
93 = 450.12	934.12	1418.12	1,400 = 6,776	13 = 3.15
94 = 454.96	938.96	1422.96	1,500 = 7,260	14 = 3.39
95 = 459.80	943.80	1427.80	1,600 = 7,744	15 = 3.63
96 = 464.64	948.64	1432.64	1,700 = 8,228	16 = 3.87
97 = 469.48	953.48	1437.48	1,800 = 8,712	17 = 4.11
98 = 474.32	958.32	1442.32	1,900 = 9,196	18 = 4.36
99 = 479.16	963.16	1447.16	2,000 = 9,680	19 = 4.60
100 = 484.00	968.00	1452.00	3,000 = 14,520	20 = 4.84

FRANCS AND DOLLARS.

1fr = \$.19	31fr = \$5.77	61fr = \$11.35	91fr = \$16.93
2 = .37	32 = 5.95	62 = 11.53	92 = 17.11
3 = .56	33 = 6.14	63 = 11.72	93 = 17.30
4 = .74	34 = 6.32	64 = 11.90	94 = 17.48
5 = .93	35 = 6.51	65 = 12.09	95 = 17.67
6 = 1.12	36 = 6.70	66 = 12.28	96 = 17.86
7 = 1.30	37 = 6.88	67 = 12.46	97 = 18.04
8 = 1.49	38 = 7.07	68 = 12.65	98 = 18.23
9 = 1.67	39 = 7.25	69 = 12.83	99 = 18.41
10 = 1.86	40 = 7.44	70 = 13.02	100 = 18.60
11 = 2.05	41 = 7.63	71 = 13.21	200 = 37.20
12 = 2.23	42 = 7.81	72 = 13.39	300 = 55.80
13 = 2.42	43 = 8.00	73 = 13.58	400 = 74.40
14 = 2.60	44 = 8.18	74 = 13.76	500 = 93.00
15 = 2.79	45 = 8.37	75 = 13.95	600 = 111.60
16 = 2.98	46 = 8.56	76 = 14.14	700 = 130.20
17 = 3.16	47 = 8.74	77 = 14.32	800 = 148.80
18 = 3.35	48 = 8.93	78 = 14.51	900 = 167.40
19 = 3.53	49 = 9.11	79 = 14.69	1,000 = 186.00
20 = 3.72	50 = 9.30	80 = 14.88	2,000 = 372.00
21 = 3.91	51 = 9.49	81 = 15.07	3,000 = 558.00
22 = 4.09	52 = 9.67	82 = 15.25	4,000 = 744.00
23 = 4.28	53 = 9.86	83 = 15.44	5,000 = 930.00
24 = 4.46	54 = 10.04	84 = 15.62	6,000 = 1,116.00
25 = 4.65	55 = 10.23	85 = 15.81	7,000 = 1,302.00
26 = 4.84	56 = 10.42	86 = 16.00	8,000 = 1,488.00
27 = 5.02	57 = 10.60	87 = 16.18	9,000 = 1,674.00
28 = 5.21	58 = 10.79	88 = 16.37	10,000 = 1,860.00
29 = 5.39	59 = 10.97	89 = 16.55	20,000 = 3,720.00
30 = 5.58	60 = 11.16	90 = 16.74	30,000 = 5,580.00

CENTIMES AND CENTS.

5 = .01	21 = .04	38 = .07	54 = .10	70 = .13	86 = .16
11 = .02	27 = .05	43 = .08	59 = .11	75 = .14	91 = .17
16 = .03	32 = .06	48 = .09	64 = .12	81 = .15	97 = .18

THALERS.

12 pfennings = 1 grosch, 30 groschen = 1 thaler = 69 cents.

1tha = \$.69	31tha = \$21.89	61tha = \$42.09	91tha = \$62.79
2 = 1.38	32 = 22.08	62 = 42.78	92 = 63.48
3 = 2.07	33 = 22.77	63 = 43.47	93 = 64.17
4 = 2.76	34 = 23.46	64 = 44.16	94 = 64.86
5 = 3.45	35 = 24.15	65 = 44.85	95 = 65.55
6 = 4.14	36 = 24.84	66 = 45.54	96 = 66.24
7 = 4.83	37 = 25.53	67 = 46.23	97 = 66.93
8 = 5.52	38 = 26.22	68 = 46.92	98 = 67.62
9 = 6.21	39 = 26.91	69 = 47.61	99 = 68.31
10 = 6.90	40 = 27.60	70 = 48.30	100 = 69.00
11 = 7.59	41 = 28.29	71 = 48.99	200 = 138.00
12 = 8.28	42 = 28.98	72 = 49.68	300 = 207.00
13 = 8.97	43 = 29.67	73 = 50.37	400 = 276.00
14 = 9.66	44 = 30.36	74 = 51.06	500 = 345.00
15 = 10.35	45 = 31.05	75 = 51.75	600 = 414.00
16 = 11.04	46 = 31.74	76 = 52.44	700 = 483.00
17 = 11.73	47 = 32.43	77 = 53.13	800 = 552.00
18 = 12.42	48 = 33.12	78 = 53.82	900 = 621.00
19 = 13.11	49 = 33.81	79 = 54.51	1,000 = 690.00
20 = 13.80	50 = 34.50	80 = 55.20	2,000 = 1,380.00
21 = 14.49	51 = 35.19	81 = 55.89	3,000 = 2,070.00
22 = 15.18	52 = 35.88	82 = 56.58	4,000 = 2,760.00
23 = 15.87	53 = 36.57	83 = 57.27	5,000 = 3,450.00
24 = 16.56	54 = 37.26	84 = 57.96	6,000 = 4,140.00
25 = 17.25	55 = 37.95	85 = 58.65	7,000 = 4,830.00
26 = 17.94	56 = 38.64	86 = 59.34	8,000 = 5,520.00
27 = 18.63	57 = 39.33	87 = 60.03	9,000 = 6,210.00
28 = 19.32	58 = 40.02	88 = 60.72	10,000 = 6,900.00
29 = 20.01	59 = 40.71	89 = 61.41	20,000 = 13,800.00
30 = 20.70	60 = 41.40	90 = 62.10	40,000 = 27,600.00

RIX DOLLAR BANCO = 39 $\frac{1}{4}$ CENTS.

1r.d.=	\$.40	31r.d.=	\$12.32	61r.d.=	\$24.25	91r.d.=	\$36.17
2 =	.79	32 =	12.72	62 =	24.64	92 =	36.57
3 =	1.19	33 =	13.12	63 =	25.04	93 =	36.97
4 =	1.59	34 =	13.51	64 =	25.44	94 =	37.36
5 =	1.99	35 =	13.91	65 =	25.84	95 =	37.76
6 =	2.38	36 =	14.31	66 =	26.23	96 =	38.16
7 =	2.78	37 =	14.71	67 =	26.63	97 =	38.56
8 =	3.18	38 =	15.10	68 =	27.03	98 =	38.95
9 =	3.58	39 =	15.50	69 =	27.43	99 =	39.35
10 =	3.97	40 =	15.90	70 =	27.82	100 =	39.75
11 =	4.37	41 =	16.30	71 =	28.22	200r.d.=	\$79.50
12 =	4.77	42 =	16.69	72 =	28.62	300 =	119.25
13 =	5.17	43 =	17.09	73 =	29.02	400 =	159.00
14 =	5.56	44 =	17.49	74 =	29.41	500 =	198.75
15 =	5.96	45 =	17.89	75 =	29.81	600 =	238.50
16 =	6.36	46 =	18.28	76 =	30.21	700 =	278.25
17 =	6.76	47 =	18.68	77 =	30.61	800 =	318.00
18 =	7.15	48 =	19.08	78 =	31.00	900 =	357.75
19 =	7.55	49 =	19.48	79 =	31.40	1,000 =	397.50
20 =	7.95	50 =	19.87	80 =	31.80	2,000 =	795.00
21 =	8.35	51 =	20.27	81 =	32.20	3,000 =	1,192.50
22 =	8.74	52 =	20.67	82 =	32.59	4,000 =	1,590.00
23 =	9.14	53 =	21.07	83 =	32.99	5,000 =	1,987.50
24 =	9.54	54 =	21.46	84 =	33.39	6,000 =	2,385.00
25 =	9.94	55 =	21.86	85 =	33.79	7,000 =	2,782.50
26 =	10.33	56 =	22.26	86 =	34.18	8,000 =	3,180.00
27 =	10.73	57 =	22.66	87 =	34.58	9,000 =	3,577.50
28 =	11.13	58 =	23.05	88 =	34.98	10,000 =	3,975.00
29 =	11.53	59 =	23.45	89 =	35.38	20,000 =	7,950.00
30 =	11.92	60 =	23.85	90 =	35.77	30,000 =	11,925.00

COMPANY RUPEES.

12 pice = 1 anna, 16 annas = 1 rupee = 44½ cents.

1ru = \$44	31ru = \$13.79	61ru = \$27.14	91ru = \$40.49
2 = .89	32 = 14.24	62 = 27.59	92 = 40.94
3 = 1.33	33 = 14.68	63 = 28.03	93 = 41.38
4 = 1.78	34 = 15.13	64 = 28.48	94 = 41.83
5 = 2.22	35 = 15.57	65 = 28.92	95 = 42.27
6 = 2.67	36 = 16.02	66 = 29.37	96 = 42.72
7 = 3.11	37 = 16.46	67 = 29.81	97 = 43.16
8 = 3.56	38 = 16.91	68 = 30.26	98 = 43.61
9 = 4.00	39 = 17.35	69 = 30.70	99 = 44.05
10 = 4.45	40 = 17.80	70 = 31.15	100 = 44.50
11 = 4.89	41 = 18.24	71 = 31.59	
12 = 5.34	42 = 18.69	72 = 32.04	
13 = 5.78	43 = 19.13	73 = 32.48	
14 = 6.23	44 = 19.58	74 = 32.93	
15 = 6.67	45 = 20.02	75 = 33.37	
16 = 7.12	46 = 20.47	76 = 33.82	
17 = 7.56	47 = 20.91	77 = 34.26	
18 = 8.01	48 = 21.36	78 = 34.71	
19 = 8.45	49 = 21.80	79 = 35.15	
20 = 8.90	50 = 22.25	80 = 35.60	
21 = 9.34	51 = 22.69	81 = 36.04	
22 = 9.79	52 = 23.14	82 = 36.49	
23 = 10.23	53 = 23.58	83 = 36.93	
24 = 10.68	54 = 24.03	84 = 37.38	
25 = 11.12	55 = 24.47	85 = 37.82	
26 = 11.57	56 = 24.92	86 = 38.27	
27 = 12.01	57 = 25.36	87 = 38.71	
28 = 12.46	58 = 25.81	88 = 39.16	
29 = 12.90	59 = 26.25	89 = 39.60	
30 = 13.35	60 = 26.70	90 = 40.05	

ANNAS.

1an = \$.03
2 = .06
3 = .08
4 = .11
5 = .14
6 = .17
7 = .19
8 = .22
9 = .25
10 = .28
11 = .31
12 = .33
13 = .36
14 = .39
15 = .42
16 = .44

SICILY OUNCES.

20 grani = 1 tari = 8 cents, 30 tari = 1 ounce = \$2.40.

1ou. = \$2.40	31ou = \$74.40	61ou. = \$146.40	91ou. = \$218.40
2 = 4.80	32 = 76.80	62 = 148.80	92 = 220.80
3 = 7.20	33 = 79.20	63 = 151.20	93 = 223.20
4 = 9.60	34 = 81.60	64 = 153.60	94 = 225.60
5 = 12.00	35 = 84.00	65 = 156.00	95 = 228.00
6 = 14.40	36 = 86.40	66 = 158.40	96 = 230.40
7 = 16.80	37 = 88.80	67 = 160.80	97 = 232.80
8 = 19.20	38 = 91.20	68 = 163.20	98 = 235.20
9 = 21.60	39 = 93.60	69 = 165.60	99 = 237.60
10 = 24.00	40 = 96.00	70 = 168.00	100 = 240.00
11 = 26.40	41 = 98.40	71 = 170.40	200 = \$480
12 = 28.80	42 = 100.80	72 = 172.80	300 = 720
13 = 31.20	43 = 103.20	73 = 175.20	400 = 960
14 = 33.60	44 = 105.60	74 = 177.60	500 = 1,200
15 = 36.00	45 = 108.00	75 = 180.00	600 = 1,440
16 = 38.40	46 = 110.40	76 = 182.40	700 = 1,680
17 = 40.80	47 = 112.80	77 = 184.80	800 = 1,920
18 = 43.20	48 = 115.20	78 = 187.20	900 = 2,160
19 = 45.60	49 = 117.60	79 = 189.60	1,000 = 2,400
20 = 48.00	50 = 120.00	80 = 192.00	2,000 = 4,800
21 = 50.40	51 = 122.40	81 = 194.40	3,000ou. = \$7,200
22 = 52.80	52 = 124.80	82 = 196.80	4,000 = 9,600
23 = 55.20	53 = 127.20	83 = 199.20	5,000 = 12,000
24 = 57.60	54 = 129.60	84 = 201.60	6,000 = 14,400
25 = 60.00	55 = 132.00	85 = 204.00	7,000 = 16,800
26 = 62.40	56 = 134.40	86 = 206.40	8,000 = 19,200
27 = 64.80	57 = 136.80	87 = 208.80	9,000 = 21,600
28 = 67.20	58 = 139.20	88 = 211.20	10,000 = 24,000
29 = 69.60	59 = 141.60	89 = 213.60	20,000 = 48,000
30 = 72.00	60 = 144.00	90 = 216.00	30,000 = 72,000

**A TABLE OF FOREIGN WEIGHTS AND MEASURES REDUCED
TO THE STANDARD OF THE UNITED STATES.***

AMSTERDAM.		ENGLAND.	
1 lb. =	1.089 lbs.	Old ale gallon =	1.22 galls.
100 lbs. 1 centner.	108.93 lbs.	Imperial gallon	1.20 galls.
Last of grain	85.25 bush.	Old wine gallon	1.00 galls.
Ahm of wine	41.00 gals.	Quarter of grain, or eight	
Amsterdam foot	0.93 feet.	imperial bushels	8.25 bush.
Antwerp foot	0.94 feet.	Imperial corn bushel, or	
Rhineland foot	1.03 feet.	eight imperial gallons	1.03 bush.
Amsterdam ell	2.26 feet.	Old Winchester bushel	1.00 bush.
Ell of the Hague	2.28 feet.	Imperial yard	36.00 in.
Ell of the Brabant	2.30 feet.	Troy lb.	$\frac{1}{144}$ ths of a lb. av.
FRANCE.		CHINA.	
Metre =	3.28 feet.	Tale =	1 1.3 oz.
Decimetre (1.10th metre)	3.94 inch.	16 tale 1 catty	1 1.3 lbs.
Velt	2.00 galls.	100 catties 1 picul	133 1.3 lbs.
Hectolitre	26.42 galls.	RUSSIA.	
Decalitre	2.64 galls.	1 lb.	.9026 lb.
Litre	2.11 pts.	100 lbs. of 32 laths each	90.26 lbs.
Kilolitre	35.32 feet.	Chertwert of grain	5.95 bush.
Hectolitre	2.84 bush.	Vedro of wine	3.25 galls.
Decalitre	9.08 qts.	Petersburg foot	1.18 galls.
Millier	2.205 lbs.	Moscow foot	1.10 galls.
Quintal	220.54 lbs.	Pood	36 lbs.
Killogramme	2.21 lbs.	PRUSSIA.	
PORTUGAL.		1 lb. =	1.0311 lbs.
1 lb. =	1.0119 lbs.	100 lbs. of 2 Cologne	
100 lbs.	101.19 lbs.	marks each	103.11 lbs.
22 lbs. (1 arroba)	22.26 lbs.	Quintal, 110 lbs.	113.42 lbs.
4 arrobas of 22 lbs. (1		Sheffel of grain	1.56 bush.
quintal)	89.05 lbs.	Eimar of wine	18.14 galls.
Alquiere	4.75 bush.	Ell of cloth	2.19 feet.
Mojo of grain	23.03 bush.	Foot	1.03 feet.
Last of salt	70.00 bush.		
Almude of wine	4.37 galls.		

* Hartshorn's Tables.

SICILY.

Cantaro grosso=	192.50	lbs.
Cantaro sottile.....	175.00	lbs.
100 lbs.....	70.00	lbs.
Salma grossa of grain..	9.77	bush.
Salma generale	7.85	bush.
Salma of wine	23.06	galls.
1 lb. ....	.70	lb.

SPAIN.

Quintal, or 4 arrobas=	101.44	lbs.
Arroba.....	25.36	lbs.
Arroba of wine.....	4.43	galls.
Fanega of grain.....	1.60	bush.

SWEDEN.

1 lb. =.....	.7376	lbs.
100 lbs., or 5 lispunds.	73.76	lbs.
Kan of corn.....	7.42	bush.
Last.....	75.00	bush.
Cann of wine.....	69.09	galls.
Ell of cloth.....	1.95	feet.

SMYRNA.

1 lb. =.....	1.2948	lbs.
100 lbs. (1 quintal) ..	129.48	lbs.
Oke	2.83	lbs.
Quillot of grain.....	1.46	bush.
Quillot of wine.....	13.50	galls.

VENICE.

1 lb. =.....	1.0518	lbs.
100 lbs. peso grosso ..	105.18	lbs.
100 lbs. peso sottile...	64.04	lbs.
Moggio of grain.....	9.08	bush.
Anifora of wine	137.00	galls.

MALTA.

1 lb. =.....	1.745	lbs.
100 lbs. 1 cantar.....	174.50	lbs.
Salma of grain.....	8.22	bush.
Foot.....	0.85	foot.

TRIESTE.

1 lb. =	1.236	lbs.
100 lbs.....	123.60	lbs.
Stajo of grain.....	2.34	bush.
Orna or eimer of wine.	14.94	galls.
Ell for woollens	2.22	feet.
Ell for silk	2.10	feet.

DENMARK.

1 lb. =.....	1.1028	lbs.
100 lbs. 1 centner ...	110.28	lbs.
Barrel or toende of corn	3.95	bush.
Viertel of wine.....	2.04	galls.
Copenhagen or Rhine-		
land foot.....	1.03	feet.

GENOA.

1 lb. =.....	.7687	lbs.
100 lbs., or peso grosso.	76.87	lbs.
100 lbs., or peso sottile.	69.89	lbs.
Mina of grain	3.43	bush.
Mezzarola of wine	39.22	galls.

HAMBURG.

1 lb. =.....	1.068	lbs.
100 lbs.....	106.8	lbs.
Last of grain	89.64	bush.
Ahm of wine	38.25	galls.
Hamburg foot	0.96	feet.
Ell.....	1.92	feet.

NAPLES.

Cantaro grosso.....	196.50	lbs.
Cantaro piccolo.....	106.00	lbs.
Carro of grain	52.24	bush.
Carro of wine.....	264.00	galls.

NETHERLANDS.

Ell =	3.28	feet.
Mudde of Zak	2.84	bush.
Vat hectolitre.....	26.42	galls.
Kan litre.....	2.11	pints.
Pond killogramme	2.21	lbs.

Account Sales twenty-six cases Bengal Indigo, received per bark "Tornado," Harrison, master, from Calcutta, for account of Messrs. Atkinson & Co., of said place, and consigned to George N. Comer, of Boston.

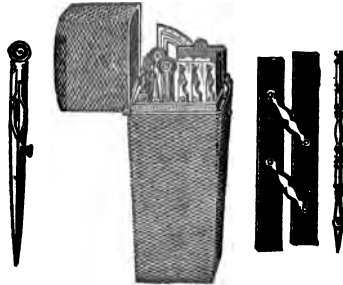
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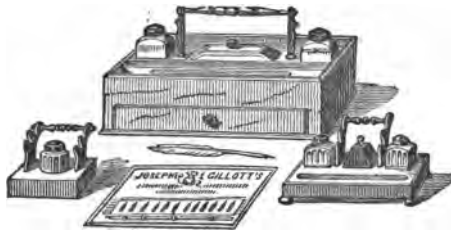
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